Food Safety and Inspection Service
Annual Sampling Program Plan
Fiscal Year 2021

United States Department of Agriculture

Food Safety and Inspection Service

Contents

Introduction

The U.S. Department of Agriculture's (USDA) Food Safety and Inspection Service (FSIS) inspects meat, poultry, and egg products to verify whether the food produced is safe, wholesome, and properly labeled. Verification activities serve to protect the public from foodborne hazards. A key FSIS inspection verification activity is the sampling of product for microbiological contaminants or chemical residues.

This report identifies changes planned for fiscal year (FY) 2021 to FSIS' various sampling programs and describes the Agency's overall strategy for directing its sampling resources.

Background

FSIS Agency Planning

The FSIS published Strategic Plan for FY 2017-2021 includes an objective to strengthen FSIS sampling programs. The activities in the FY 2021 Annual Sampling Plan directly align with the FSIS FY 2021 Annual Plan.

In FY 2019, FSIS concluded a comprehensive internal evaluation of all sampling projects called the Strategic Assessment of Sampling Resources (SASR). During this evaluation, FSIS developed several new tools to help optimize the benefits provided by each sampling project. In conjunction with these tools, the evaluation provided several recommendations that helped improve internal procedures. In FY 2020, FSIS began implementing those recommendations.

FSIS Process for Scheduling, Collecting, and Analyzing Samples

The Agency's process of scheduling, collecting, and analyzing routine domestic samples typically begins with a sampling task assigned to FSIS inspection program personnel (IPP) through the Public Health Information System (PHIS). The number of sampling tasks IPP can receive at a domestic establishment varies greatly depending on the types and quantities of products produced. In FY 2020, FSIS investigated ways to improve Agency sample allocation with certain measures to be implemented in FY 2021. Additional non-routine sampling tasks might be assigned to an establishment, or country for imported product sampling, in response to routine results or other establishment performance history. Sampling Type of Inspection (TOI) tasks are assigned to imported product from each foreign country and product combination based on the number of imported shipments received.

It is important to note there might be a difference between the number of samples that are anticipated to be analyzed and the total number of samples analyzed within the fiscal year. The lack of available products that are eligible for a specific project within the collection window is one of the biggest challenges IPP face when trying to collect all the samples accounted for in the sampling plan; therefore, the FSIS Annual Sampling Plan

is based *on the number of samples anticipated to be analyzed* instead of those assigned. For those projects that do not have a required monthly frequency, FSIS can adjust the number of samples assigned throughout the year to reach the sample target numbers. Additionally, differences between the planned number and analyzed number of samples may be due to changes in the number of inspected establishments producing eligible products. In order to collect samples from infrequent producers and optimize the total number of annual planned samples collected and analyzed, FSIS adjusts the number of samples assigned based on the average number of samples collected throughout the sampling year. The estimates for each sampling program are based on current plans, FSIS policies, and industry practices and are therefore subject to change over the course of the fiscal year.

After receiving the sampling tasks and verifying eligible product availability, IPP collect and ship the samples to one of three FSIS testing laboratories, where the sample is tested for specified analytes. An analyte is a substance whose constituents are identified and measured, and the FSIS laboratories perform different tests depending on the sampling program and target analytes. The Agency increases sample resource efficiency by maximizing the number of analytes evaluated per sample collection and test.

Data Sharing and Analysis
FSIS routinely analyzes sampling data. The results of these analyses are used in a variety of ways, including monitoring the effectiveness, where applicable, of Hazard Analysis and Critical Control Points programs, informing Agency policy making, estimating public health impact, and advising strategic and performance planning. FSIS posts most of the sampling data on the Agency's website and shares the data with establishments through quarterly letters, as well as directly sharing sampling results with establishments.

FSIS engaged with federal partners to use whole genome sequencing (WGS) data for regulatory and public health purposes. FSIS aligns WGS-related projects with the goals and objectives of the FSIS Strategic Plan and other policies. FSIS laboratories performed WGS on all pathogens isolated from FSIS-regulated products. The information gathered from WGS helps FSIS to detect and investigate outbreaks of foodborne illness, identify potential instances of harborage, and identify unique genes, including antimicrobial resistance genes. In FY 2020, FSIS modernized *Salmonella* serotyping by using WGS data to determine the serotype. This update created efficiencies within the Agency by reducing the number of analyses required to determine the same, if not more, information. Moving forward, FSIS will explore new ways to expand the use of WGS data to support the regulatory and public health efforts of FSIS more effectively. Potential future efforts include exploring how to use genomic data to assess pathogen adaptability and persistence as well as the potential for pathogenicity and virulence of *Salmonella*. These efforts will build off public health, regulatory, and research partners' efforts in support of FSIS Research Priorities.

Microbiological and Chemical Residue Sampling Planned Changes from FY 2019 to FY 2021

Table 1 and Table 2 summarize, for microbiological and chemical residue programs, respectively, the total planned number of analyses and corresponding planned number of analytes tested for during FY 2019, FY 2020, and FY 2021 by product class. Data is based on the proposed number of samples and actual analyses performed during the previous fiscal years.

Table 1: Planned Number of Microbiological Analyses (Tests) and Analytes FY 2019-FY 2021

Product Class	Planned for FY 2019			Planned for FY 2020			Planned for FY 2021			Difference[1] (FY 2021-FY 2020)		
	Samples Planned	Tests Planned	Analytes Planned	Samples Planned	Tests Planned	Analytes Planned	Samples Planned	Tests Planned	Analytes Planned	Samples Planned	Tests Planned	Analytes Planned
Raw Beef	18,762	49,416	197,664	18,762	49,416	94,488	19,233	51,240	99,336	**471**	**1,824**	**4,848**
Raw Pork	11,040	22,080	110,400	11,040	22,080	33,120	11,040	22,080	33,120	**0**	**0**	**0**
Raw Poultry	47,736	64,416	64,416	47,736	64,416	64,416	47,892	64,248	64,248	**156**	**-168**	**-168**
Raw Siluriformes	660	660	660	660	660	660	660	660	660	**0**	**0**	**0**
RTE/Eggs — Ready-To-Eat	15,919	29,616	29,616	15,919	29,616	29,616	15,919	29,616	29,616	**0**	**0**	**0**
RTE/Eggs — RLm	5,437	5,437	5,437	5,437	5,437	5,437	5,437	5,437	5,437	**0**	**0**	**0**
RTE/Eggs — Eggs	1,600	3,200	3,216	1,600	3,200	3,200	1,600	3,200	3,200	**0**	**0**	**0**
NARMS	6,400	16,600	441,100	7,780	18,600	443,100	7,780	18,600	443,100	**0**	**0**	**0**
Imports[2]	6,804	16,176	29,376	6,804	14,976	29,376	6,312	13,884	27,893	**-492**	**-1,092**	**-1,483**
Total	**114,358**	**207,601**	**881,885**	**115,738**	**208,391**	**703,413**	**115,873**	**208,616**	**706,741**	**135**	**564**	**3,197**

[1] The differences between FY 2020 and FY 2021 plans include the following: realignment in imports for poultry and Siluriformes, discontinued sampling other raw chicken parts, and cessation of the most probable number enumeration analysis. For a full list of allocation changes, please see Table 4.
[2] Import microbiology testing analyses estimates are driven by expected shipment frequency and volume-based TOI assignments.

Table 2: Planned Number of Chemical Residue Analyses and Analytes Reported FY 2019-FY 2021

Product Class	Planned for FY 2019			Planned for FY 2020			Planned for FY 2021			Difference[3] (FY 2021-FY 2020)		
	Samples Planned	Tests Planned	Analytes Planned	Samples Planned	Tests Planned	Analytes Planned	Samples Planned	Tests Planned	Analytes Planned	Samples Planned	Tests Planned	Analytes Planned
Domestic Residues												
Beef Cows	712	3,240	121,320	712	3,240	121,320	752	2,646	132,678	**40**	**-594**	**11,358**
Bob Veal	356	1,620	60,660	356	1,620	60,660	400	1,428	71,604	**44**	**-192**	**10,944**
Dairy Cows	712	3,240	121,320	712	3,240	121,320	788	3,152	144,992	**76**	**-88**	**23,672**
Heifers	356	1,620	60,660	356	1,620	60,660	340	1,218	61,074	**-16**	**-402**	**414**
Steer	356	1,620	60,660	356	1,620	60,660	328	1,176	58,968	**-28**	**-444**	**-1,692**
Sows	712	2,160	111,600	712	2,160	111,600	788	3,152	144,992	**76**	**992**	**33,392**
Market Swine	712	2,880	119,880	712	2,880	119,880	728	2,912	133,952	**16**	**32**	**14,072**
Young Chickens	712	2,160	110,880	356	1,030	55,440	356	1,182	53,190	**0**	**152**	**-2,250**
Whole Chickens	-	-	-	356	1,030	55,440	356	1,576	90,620	**0**	**546**	**35,180**
Young Turkeys	712	2,160	110,880	712	2,160	110,880	788	2,772	137,808	**76**	**612**	**26,928**
Sheep	150	546	25,584	100	357	16,728	100	300	16,728	**0**	**-57**	**0**
Lamb	-	-	-	100	357	16,728	100	300	16,728	**0**	**-57**	**0**
Goats	300	1,050	49,200	300	900	35,100	300	600	35,100	**0**	**-300**	**0**
Roaster Swine	300	300	300	300	300	300	300	150	150	**0**	**-150**	**-150**
Veal - Other	150	640	19,890	150	640	19,890	150	588	29,484	**0**	**-52**	**9,594**
Egg Product	400	400	22,378	250	500	37,296	250	500	38,637	**0**	**0**	**1,341**
Siluriformes	650	2,130	103,290	650	2,130	103,290	650	2,455	116,075	**0**	**325**	**12,785**
State-Inspected Establishment Sampling for U.S. National Residue Program[1]	720	2,760	128,208	720	2,760	128,208	300	1,050	52,614	**-420**	**-1,710**	**-75,594**
Other												
Imports[2]	5,600	24,828	963,114	4,000	20,076	773,892	3,400	18,276	675,805	**-600**	**-1,800**	**-98,087**
KIS™	4,000	8,000	424,000	4,000	8,000	424,000	4,000	8,000	468,936	**0**	**0**	**44,936**
Total	**17,610**	**61,354**	**2,613,824**	**15,910**	**56,620**	**2,433,292**	**15,174**	**53,433**	**2,480,135**	**-736**	**-3,187**	**46,843**

Abbreviation: KIS™, Kidney Inhibition Swab.

[1] State sampling adjusted to reflect number of eligible state establishments.

[2] Import residue testing analyses estimates are driven by expected shipment frequency and volume-based TOI assignments.

[3] The differences between the FY 2020 and FY 2021 plans include: adjustment of state sampling allocations, cessation of the avermectin stand-alone method, addition of polyfluoroalkyl substances (PFAS) analysis to more commodities, and the expansion of multi-residue methods to include more analytes.

Significant Changes for the FY 2021 Plan

The following table consists of key priorities FSIS plans to implement in FY 2021. Each row describes the challenges that the Agency faces moving into FY 2021, what process is impacted and the objective(s) to achieve during the fiscal year. This table will also include modifications that may have taken place during FY 2020 after the FY 2020 Plan was published.

Table 3: FY 2021 Sampling Priorities

Cause or Challenge that Prompted Change	Impacted Sampling, Related Process, or Analyte	FY 2021 Planned Agency Goal, Target Objective, or Activity
Support sampling plan, design, analysis, and future decision-making	Sampling resource planning and allocation	• Explore strategies to modernize sample task assignment in PHIS. This effort will focus on how the Agency can further support sample assignment and collection success at an establishment throughout the year. Focus will be on the low volume establishments as this group faces unique challenges. • Evaluate options for reduced *Campylobacter* sample screen test time. • Explore strategies for increasing the number of actual risk-based *Listeria monocytogenes* (R*Lm*) sampling events completed to more closely meet the planned targets. • Explore options to reduce gaps in establishment profile information to better identify eligible establishments for all label verification projects. • Explore options to develop an allergen sampling program.
Changes to the National Residue Program (NRP)	PFAS (per- and polyfluoroalkyl substances)	• In FY 2020, FSIS implemented a testing method for per- and polyfluoroalkyl substances (PFAS), a class of persistent organic environmental contaminants that include perfluorooctanoic acid and perfluoro octane sulfonate. The exploratory testing aimed to gather data on the frequency and levels of PFAS in beef muscle. In FY 2021, PFAS monitoring will be expanded to include beef, pork, Siluriformes fish, and chicken sampling.

Cause or Challenge that Prompted Change	Impacted Sampling, Related Process, or Analyte	FY 2021 Planned Agency Goal, Target Objective, or Activity
	State-inspected establishments in the domestic NRP	• In FY 2020, FSIS evaluated sample tasks distribution to State-inspected establishments in the domestic NRP program and in FY 2021 will modernize distribution of sampling tasks.
Modernization of pathogen enumeration methodology	Most Probable Number (MPN) analysis of microbial pathogens	• The current enumeration method (MPN) can underestimate target pathogen numbers, thus reducing the method's effectiveness as an indicator of process control. • FSIS will discontinue the currently suspended MPN analysis. • FSIS will evaluate modern enumeration methods.
Utilizing WGS to obtain determinations previously done through other methods	WGS	• FSIS will deploy the use of long-read sequencing technology to supplement WGS data to completely sequence the genomes and plasmids from isolates of interest. • FSIS will explore transitioning from antimicrobial susceptibility testing to inferred resistance derived from WGS data where possible.
Address feedback on communicating sample results to industry	Result Reporting	• Modernize LIMS Direct reporting. • Increase transparency of how National Antimicrobial Resistance Monitoring System (NARMS) results impact industry.

Table 4 contains the rationale for changes in sampling number allocations between FY 2020 and FY 2021 sampling plans. Each row identifies where the change will occur in the sampling program, a description of that program, and the Agency's reasoning for the changes.

Table 4: Rationale for Changes in Sampling Allocations

Sampling by Program/Commodity	Program Description	Rationale for Any Changes from the FY 2020 Sampling Allocations
Beef Products	• FSIS conducts Shiga toxin-producing *E. coli* (STEC) sampling for product produced in domestic establishments, imported products, and raw ground beef collected at retail. • Raw non-intact beef products and raw beef products intended for raw non-intact use are eligible for sampling, including ground beef, bench trim, beef manufactured trimmings, and other raw ground beef components. • FSIS analyzes all raw beef products collected under the routine and follow-up sampling programs, including raw ground beef, bench trim, beef manufactured trimmings, and other raw ground beef components for *E. coli* O157:H7 and *Salmonella*. Additionally, FSIS analyzes beef manufacturing trimmings for non-O157 STEC as well.	• Increase sampling for beef manufacturing trim, MT60, to 4,000 samples. FSIS needs the extra 250 samples to calculate prevalence estimates. • Expand non-O157 STEC analysis to all other beef samples in addition to beef manufacturing trimmings. • Evaluate alternative surface sampling method to N60 pathogen detection. Assessment analyte options include aerobic counts and *Salmonella*. • Evaluate potential alternate beef slaughter inspection procedures comparing carcass microbial load. • Evaluate the options for enumeration of positive *E. coli* O157:H7 and *Salmonella* samples.
Pork Products	• FSIS analyzes raw intact, non-intact, and comminuted domestic and imported pork for *Salmonella*.	• No allocation changes planned for FY 2021. • Evaluate the options for enumeration of positive *Salmonella* samples.

Sampling by Program/Commodity	Program Description	Rationale for Any Changes from the FY 2020 Sampling Allocations
Poultry Products	• FSIS analyzes young chicken and turkey carcasses, comminuted chicken and turkey, and chicken part samples for *Salmonella* and *Campylobacter*.	• Implemented *Salmonella* and *Campylobacter* analyses of fowl carcasses slaughtered under New Poultry Inspection System (NPIS) with waiver exploratory project in FY 2020.

• Evaluate product volume calculation to ensure consistency in sample task assignment.

• Analyze the results of the remaining poultry exploratory sampling projects and determine next steps. This effort will include conducting an analysis to determine uses for mechanically separated poultry.

• Formally end exploratory sampling for currently suspended other raw poultry parts.

• Evaluate options for enumeration of samples positive for *Salmonella* and *Campylobacter*. |
| Siluriformes | • FSIS analyzes raw fish of the order Siluriformes for *Salmonella*. | • No allocation changes for FY2021. |

Sampling by Program/Commodity	Program Description	Rationale for Any Changes from the FY 2020 Sampling Allocations
Ready-To-Eat (RTE): Meat, Poultry, and Egg Products	• FSIS also conducts microbiological testing for *Listeria monocytogenes* (*Lm*) and *Salmonella* in both domestically produced and imported egg products in addition to other RTE products. • Product sampling is scheduled every month under random sampling and risk-based sampling projects under 2 RTEPROD projects. • R*Lm* sampling program is performed in establishments producing post-lethality exposed RTE product. An R*Lm* sampling event includes samples, consisting of product, contact surfaces, and the processing environment, collected and sampled for *Lm* under 3 R*Lm* project codes. • Intensified Verification Testing (IVT) is performed whenever an eligible establishment has a positive sample collected under the R*Lm* sampling program projects, or either one of the RTEPROD sampling projects.	• Modernized egg products sampling by consolidating the seven separate projects into two and allocating samples based on production volume to relieve burden on smaller establishments. The maximum egg product sample allocation reduced from 7 to 3 samples per establishment per month in this project. • Evaluate the options for enumeration of positive *Lm* and *Salmonella* samples.

Sampling by Program/Commodity	Program Description	Rationale for Any Changes from the FY 2020 Sampling Allocations
National Residue Program (NRP)	• The NRP sampling plan guides the collection of domestic and imported meat, poultry, and egg product samples. The domestic sampling plan includes surveillance sampling, inspector-generated, and special project sampling in both Federal and State-inspected slaughter establishments. • FSIS IPP perform inspector-generated sampling (KIS) in livestock slaughter species as per FSIS Directive 10,800.1. Per this directive, a positive sample is submitted to the FSIS laboratory for confirmatory testing.	• PFAS monitoring will be expanded to include beef, pork, Siluriformes fish, and chicken sampling. • FSIS will update NRP State sample allocations.

Sampling by Program/Commodity	Program Description	Rationale for Any Changes from the FY 2020 Sampling Allocations
Import Sampling	• FSIS analyzes imported raw beef for *E. coli* O157:H7 and *Salmonella*. • FSIS analyzes imported beef manufacturing trimmings for non-O157 STEC, which includes the following six O-antigen groups: O26, O45, O103, O111, O121, and O145. • FSIS analyzes imported poultry for *Salmonella* and *Campylobacter*. • FSIS analyzes imported raw pork products for *Salmonella*. • FSIS analyzes imported RTE and egg products for *Lm* and *Salmonella*. • FSIS analyzes imported raw fish of the order Siluriformes for *Salmonella*. • FSIS analyzes imported raw meat and poultry products and imported Siluriformes products for chemical residues.	• Realign samples allotted for sampling of imported egg products from 150 to 120 to adjust for expected volume and sampling rate. • Realign samples allotted for imported Siluriformes products from 1,000 to 700 to adjust for the expected import volume and sampling rate. • Realign samples allotted for imported raw pork products from 600 to 400 to adjust for the expected volume and sampling rate.

Sampling by Program/Commodity	Program Description	Rationale for Any Changes from the FY 2020 Sampling Allocations
NARMS Cecal and Expansion Project Sampling	• FSIS analyzes cecal content from beef, swine, young chicken, turkeys, veal, sheep, goat, and lamb for the presence of *Salmonella, Campylobacter,* generic *E. coli,* and *Enterococcus* to monitor trends in antimicrobial resistance. • FSIS analyzes Siluriformes for the presence of generic *E. coli* and *Enterococcus.* • FSIS analyzes cattle mesenteric lymph nodes for the presence of *Salmonella*.	• No allocation changes.
Other Sampling	• FSIS performs verification of species claims on domestic and imported product. • FSIS performs label verification sampling for certain labeling claims on domestic product.	• No allocation changes.

Appendices A–C outline the sampling plan grouped by product group and broken out by the individual sampling programs. Information for changes from previous years is provided in the preceding tables to the appendices. Totals in the appendices' tables have been rounded. Each table contains the following information:

1. Planned number of samples to be analyzed in FY 2020;
2. Number of samples actually analyzed in FY 2020; and
3. Planned number of samples to be analyzed in FY 2021.

Appendix A: Microbial Sampling Numbers by Product

This appendix summarizes the numbers of samples in FSIS' microbiological sampling program and presents the number of samples planned and actually analyzed in FY 2020, and the number of samples planned to be analyzed in FY 2021, by product type. Raw products are presented first, beginning with beef (Table A2), followed by pork (Table A3), fish of the order Siluriformes (Table A4) and poultry (Table A5). Ready-to-eat (RTE), not ready-to-eat (NRTE), and egg product sampling numbers are presented in Table A6.

Table A1 is a quick reference guide of the microbiological analytes by various FSIS regulated products in FY 2020. For a more in-depth review, the tables in the "Sampling by Product" section contain the stratification of the different analytes by product classes.

Table A1: Summary of Analyte tested by Product

| Product | Microbiological Analyte | | | | | |
	Salmonella	*Campylobacter*	*L. monocytogenes*	*E. coli* O157:H7	Non-O157 STEC	Indicator Organisms
Raw Beef	√			√	√[1]	√[2]
Raw Pork	√					√[2]
Raw Siluriformes	√					
Raw Poultry	√	√				√[2]
RTE Products	√		√			
Egg Products	√		√			

[1] Only domestic raw beef manufacturing trim and imported raw beef trim. All other raw beef products are tested for *Salmonella* and *E. coli* O157:H7 only.

[2] Dependent upon the program as not all beef, pork, and poultry projects are analyzed for indicator organisms.

Table A2: FY 2020 and FY 2021 Sample Numbers for Raw Beef

Product Class	Sampling Project Code	Pathogen(s)	Number of Samples FY 2020		Number of Samples FY 2021
			Planned	Actual	Planned
Raw ground beef	MT43	*E. coli* O157:H7 and *Salmonella*	11,500	10,539	11,500
Follow-up testing to a ground beef *E. coli* positive[1]	MT44 and MT44T	*E. coli* O157:H7 and *Salmonella*	TBD	76	TBD
Raw ground beef components other than trim	MT64	*E. coli* O157:H7 and *Salmonella*	1,250	1,294	1,250
Bench trim	MT65	*E. coli* O157:H7 and *Salmonella*	1,500	1,386	1,500
Beef manufacturing trim	MT60	*E. coli* O157:H7, Non-O157 STEC and S*almonella*	3,750	4,141	4,000
Follow-up testing at supplier establishments following MT43, MT44, or MT65 positive[1]	MT52	*E. coli* O157:H7, Non-O157 STEC and *Salmonella*	TBD	11	TBD
Follow-up testing to an MT60, MT64, MT65, or MT52 positive[1]	MT53	*E. coli* O157:H7, Non-O157 STEC and *Salmonella*	TBD	756	TBD
Raw ground beef at retail stores	MT05	*E. coli* O157:H7 and *Salmonella*	575	524	500
Follow-up testing to a MT05 sample[1]	MT06	*E. coli* O157:H7 and *Salmonella*	TBD	0	TBD
Imported raw ground beef[2]	MT08	*E. coli* O157:H7 and *Salmonella*	50	70	50
Imported trim and other raw ground beef components[2]	MT51	*E. coli* O157:H7, Non-O157 STEC and *Salmonella*	1,200	2,478[3]	1,200

[1] Dependent on positive findings from other *E. coli* O157:H7 or non-O157 STEC sampling projects.
[2] Lab sampling for Imports depends on the number of shipments received by country and product.
[3] Two unanticipated, intensified import sampling events increased the number of samples for MT51.

Table A3: FY 2020 and FY 2021 Sample Numbers for Raw Pork

Product Class	Sampling Project Code	Pathogen(s)	Number of Samples FY 2020		Number of Samples FY 2021
			Planned	Actual	Planned
Comminuted Pork Exploratory Sampling[2]	EXP_PK_COM02	*Salmonella* and Indicator Organisms	0	132	0
Comminuted Pork	HC_PK_COM01	*Salmonella* and Indicator Organisms	8,640	5,515	8,640
Intact Pork Cuts Exploratory Sampling[2]	EXP_PK_ICT02	*Salmonella* and Indicator Organisms	0	116	0
Non- Intact Pork Cuts Exploratory Sampling[2]	EXP_PK_NCT02	*Salmonella* and Indicator Organisms	0	94	0
Intact and Non-Intact Cuts	HC_PK_CUT01	*Salmonella* and Indicator Organisms	2,400	1,800	2,400
Imported Pork[1]	IMP_PORK	*Salmonella*	600	327	400

[1] Sampling for imports depends on the number of shipments received by country and product.
[2] FSIS discontinued exploratory pork sampling early in FY 2020 and replaced them with two new ones.

Table A4: FY 2020 and FY 2021 Sample Numbers for Raw Siluriformes

Product Class	Sampling Project Code	Analyses	Number of Samples FY 2020		Number of Samples FY 2021
			Planned	Actual	Planned
Domestic Raw Fish of the Order Siluriformes	EXP_FI_MIC01	*Salmonella*	650	598	650
Imported Raw Fish of the Order Siluriformes[1]	IMPFISH_MI	*Salmonella*	1,000	649	700

[1] Sampling for imports depends on the number of shipments received by country and product.

Table A5: FY 2020 and FY 2021 Sample Numbers for Raw Poultry

Product Class	Sampling Project Code	Pathogen(s)	Number of Samples FY 2020		Number of Samples FY 2021
			Planned	Actual	Planned
Young Chicken Carcasses	HC_CH_CARC01	*Salmonella, Campylobacter*	9,630	9,601	9,630
Ground and Other Comminuted Chicken (not Mechanically Separated)	HC_CH_COM01	*Salmonella, Campylobacter*	2,500	2,041	2,500
Exploratory - Mechanically Separated Chicken	EXP_CH_MSK01	*Salmonella, Campylobacter*	150	82	150
Chicken Parts – Legs, Breasts, Wings	HC_CPT_LBW01	*Salmonella, Campylobacter*	16,300	13,799	16,300
Chicken Parts – Other Parts	EXP_CPT_OT01	*Salmonella, Campylobacter*	80	134	0[3]
Chicken Parts – Quarters, Halves	EXP_CPT_QH01	*Salmonella, Campylobacter*	120	63	120
Turkey Carcasses	HC_TU_CARC01	*Salmonella, Campylobacter*	1,730	1,718	1,730
Ground and Other Comminuted Turkey (not Mechanically Separated)	HC_TU_COM01	*Salmonella, Campylobacter*	1,500	1,402	1,500
Exploratory - Mechanically Separated Turkey	EXP_TU_MSK01	*Salmonella, Campylobacter*	150	87	150
Imported Raw Intact Chicken and Turkey[2]	IMP_POULTRY	*Salmonella, Campylobacter*	800	761	800
NPIS Fowl Carcass Exploratory	HC_HF_CAR01	*Salmonella, Campylobacter*	0	58	240
Follow-up Sampling for Chicken Parts, Carcasses, Comminuted Chicken and Turkey[1]	F_CPT_LBW01 F_CH_COM01 F_TU_COM01 F_CH_CARC01 F_TU_CARC01	*Salmonella, Campylobacter*	TBD	2,280	TBD

[1] Dependent on findings from other *Salmonella* and *Campylobacter* projects.

[2] Sampling for imports depends on the number of shipments received by country and product.

[3] FSIS discontinued sampling of other raw chicken parts in FY 2020.

Table A6: FY 2020 and FY 2021 Sample Numbers for RTE, NRTE, and Egg Products

Product Class	Sampling Project Code	Pathogen(s)	Number of Samples FY 2020		Number of Samples FY 2021
			Planned	Actual	Planned
Both post lethality-exposed and non-post lethality- exposed RTE products	RTEPROD_Rand	*Lm* & *Salmonella*	7,400	6,620	7,400
Post lethality-exposed RTE products	RTEPROD_Risk	*Lm* & *Salmonella*	7,400	7,538	7,400
R*Lm* product samples (Composited 5-sample Units)	RLMPRODC	*Lm*	423 (2,125)[2]	165 (825)[4]	423 (2,125)[2]
R*Lm* food contact surface samples	RLMCONT	*Lm*	4,218	1634[4]	4,218
R*Lm* non-food contact environmental samples (Composited 5-sample Units)	RLMENVC	*Lm*	423 (2,125)[2]	164 (820)[4]	423 (2,125)[2]
Intensified Verification Testing (IVT) product samples[1]	INTPROD	*Lm* or *Salmonella*	TBD	270	TBD
IVT food contact surface samples[1]	INTCONT	*Lm* or *Salmonella*	TBD	558	TBD
IVT non-food contact environmental samples[1]	INTENV	*Lm* or *Salmonella*	TBD	305	TBD
Imported intact RTE product[3]	IMVRTE	*Lm* & *Salmonella*	3,000	2,819	3,000
Follow up testing to imported RTE product	FLISTERIA	*Lm*	TBD	0	TBD
Follow up testing to imported RTE product	FRTESALMONEL	*Salmonella*	TBD	0	TBD
Egg Products	EM31-EM37	*Lm* & *Salmonella*	1,600	1,072	0[5]
Egg Products	EGG_DY_MIC01 EGG_LQ_MIC01	*Lm* & *Salmonella*	0	487	1,600
Pasteurized imported liquid, frozen or dried egg products	EGGIMP	*Lm* & *Salmonella*	150	111	120

Abbreviations: RTE, ready-to-eat; NRTE, not-ready-to-eat.

[1] Dependent on positive findings from RTEPROD_RAND, RTEPROD_RISK, and R*Lm* sampling projects.

[2] The number in parenthesis represents the number of samples collected by OFO to generate the composite number of samples planned.

[3] Sampling for imports depends on the number of shipments received by country and product.

[4] Restrictions put in place due to the COVID-19 pandemic impacted the ability to collect some R*Lm* sampling.

[5] Egg product sampling project modernization resulted in the discontinuation of these projects.

Appendix B: Chemical Residue Sampling Numbers by Product

This appendix summarizes the numbers of samples in FSIS' chemical residue sampling program for FY 2020 and FY 2021. Table B1 presents the number of samples by production class. Tables B2 and B3 present the number of analyses performed by method used in each production class broken out by domestic and import sampling.

Table B1: FY 2019 and FY 2020 Sample Numbers for Chemical Residues

Production Class	Sampling Project Code	Number of Samples FY 2020		Number of Samples FY 2021
		Planned	Actual	Planned
Beef Cows	NRP_BC	712	731	752
Beef Cow – State[1]	NRP_BC_S	88	56	48
Bob Veal	NRP_BV	356	390	400
Bob Veal - State[1]	NRP_BV_S	44	0	0
Dairy Cows	NRP_DC	712	743	788
Dairy Cows – State[1]	NRP_DC_S	88	60	12
Heifers	NRP_HF	356	418	340
Heifers – State[1]	NRP_HF_S	44	53	60
Steer	NRP_ST	356	390	328
Steer - State[1]	NRP_ST_S	44	63	72
Market Swine	NRP_MS	712	722	728
Market Swine - State[1]	NRP_MS_S	88	88	72
Sows	NRP_SW	712	628	788
Sows – State[1]	NRP_SW_S	88	45	12
Young Chicken	NRP_YC	356	354	394
Young Chicken - State[1]	NRP_YC_S	88	23	12
Whole Chicken	NRP_WC	356	181	394
Young Turkey	NRP_YT	712	615	788
Young Turkey – State[1]	NRP_YT_S	88	7	12
Sheep	NRP_SH	100	103	100
Lambs	NRP_LA	100	114	100
Goats	NRP_GO	300	281	300
Roaster Swine	NRP_RS	300	277	300
Veal other than bob veal	NRP_FFV, NRP_NFFV	150	116	150
Feral Swine	NRP_FS	75	53	75
Egg Products	NRP_EG	250	158	250
Siluriformes – Domestic	RES_FI	650	578	650
Siluriformes – Imports[4]	IMPFISH_CH_E and IMPFISH_CH_W	1,000	1,293	700

| Production Class | Sampling Project Code | Number of Samples FY 2020 | | Number of Samples FY 2021 |
		Planned	Actual	Planned
KIS™ Test[2]	KIS	NA	136,576	NA
KIS™ Test – Laboratory Confirmation[3]	KIS	NA	2,779	NA
Collector Generated Residues	Various	NA	122	NA
Import Residue	Various	2,000	5,359[5]	2,000

Abbreviations: KIS™, Kidney Inhibition Swab; NA, non-applicable.

[1] FSIS updated allocations for state establishments, which are part of the state meat and poultry inspection (MPI) program, that produce the same species as those at federally inspected establishments to be based off the number of qualifying establishments and not a standard percentage as done previously.

[2] These KIS™ tests are performed by FSIS Office of Field Operations (OFO) IPP in the field and not by the laboratories.

[3] FSIS in-plant inspection personnel send positive KIS™ tests to FSIS laboratories for confirmation.

[4] Sampling for imports depends on the number of shipments received by country and product.

[5] Two unanticipated, intensified import sampling events increased the number of samples for import residue testing.

Table B2: Planned Number of Chemical Residues Analysis by Production Class: Domestic Residue Plan

Methods	Number of Animals	Aminoglycosides	Antifungal Dyes	B-agonist	Carbadox	Metals	Multi-residue	Nitrofurans	Pesticides	PFAS	Sulfonamides
Beef Cows	N= 800	800	-	400	-	100	800	-	400	-	-
Bob Veal	N= 400	400	-	200	-	100	400	-	200	-	-
Dairy Cows	N= 800	800	-	400	-	100	800	-	400	-	-
Heifers	N= 400	400	-	200	-	100	400	-	200	-	-
Steers	N= 400	400	-	200	-	100	400	-	200	-	-
Roaster Swine	N= 300	-	-	-	300	-	-	-	-	-	-
Market Swine	N= 800	800	-	200	-	100	800	-	400	200	-
Sows	N= 800	800	-	200	-	100	800	-	400	200	-
Feral Swine	N= 75	-	-	-	-	-	-	-	75	-	-
Young Chickens	N= 400	400	-	-	-	150	400	-	-	-	-
Young Whole Chickens	N=400	400	-	-	-	-	400	400	400	400	-
Young Turkeys	N= 800	800	-	-	-	150	800	400	400	-	-
Goats	N= 300	300	-	-	-	-	300	-	-	-	-
Siluriformes	N= 650	-	325	-	-	325	650	325	325	150	-
Egg Products	N= 400	-	-	-	-	-	250	-	250	-	-
Formula-	N= 75	**75**	-	**37**	-	-	**75**	-	-	-	-

Ffed Veal

Non-Fformula-Fed Veal	N= 75	75	-	37	-	-	75	-	-	-	-
Sheep	N= 100	100	-	-	-	-	100	-	50	-	-
Lamb	N= 100	100	-	-	-	-	100	-	50	-	-
Total		6300	325	1800	300	1325	7200	1125	3575	950	0

Table B3: Planned Number of Chemical Residues Analysis by Production Class: Import Residue Plan

Methods	Aminoglycosides	Antifungal Dyes	Avermectins	B-agonist	Carbadox	Metals	Multi-residue	Nitrofurans	Pesticides	PFAS	Sulfonamides
Beef, Raw	200	-	-	100	-	50	200	-	100	-	-
Beef, Processed	-	-	25	-	-	12	-	-	-	-	25
Chicken, Raw	50	-	-	-	-	25	50	25	25	-	-
Chicken, Processed	-	-	-	-	-	5	-	-	-	-	5
Turkey, Raw	40	-	-	-	-	10	40	25	25	-	-
Turkey, Processed	-	-	-	-	-	5	-	-	-	-	5
Veal, Raw	70	-	-	35	-	-	70	-	35	-	-
Veal, Processed	-	-	5	-	-	-	-	-	-	-	-
Goat, Raw	25	-	-	-	-	-	25	-	25	-	-
Goat, Processed	-	-	5	-	-	-	-	-	-	-	-
Lamb, Raw	20	-	-	-	-	-	20	-	10	-	-
Lamb, Processed	-	-	5	-	-	-	-	-	-	-	-
Mutton, Raw	5	-	-	-	-	-	5	-	5	-	-
Mutton, Processed	-	-	5	-	-	-	-	-	-	-	-
Pork, Raw	200	-	-	100	-	50	200	-	100	-	-
Pork, Processed	-	-	25	-	-	12	-	-	-	-	25
Siluriformes, Raw	-	350	-	-	-	350	700	350	350	150	-
Egg Products	-	-	-	-	-	-	-	-	40	-	-
Total	610	700	70	235	0	869	1310	750	1065	150	60

Appendix C: National Antimicrobial Resistance Monitoring System (NARMS) Programs

The [National Antimicrobial Resistance Monitoring System (NARMS)](#) is an interagency, collaborative partnership with state and local public health departments, the U.S. Food and Drug Administration (FDA), the Centers for Disease Control and Prevention (CDC), and the U.S. Department of Agriculture (USDA). This national public health surveillance system tracks changes in antimicrobial susceptibility of select foodborne enteric bacteria found in ill people (CDC), retail meats (FDA), and food animals (USDA FSIS). The NARMS program at USDA focuses on two sampling points: samples collected from intestinal (cecal) content from food animals and carcass or food commodity samples. While the carcass or food commodity results are derived by co-analyzing samples collected for existing sampling programs, the cecal sampling program involves collection of cecal content samples from food animals at slaughter facilities. This appendix summarizes the number of samples needed to execute cecal sampling through a collaborative program with the FDA. Table C1 summarizes how resources are attributed to each commodity.

Table C1: FY 2020 and FY 2021 Sample Numbers for NARMS

Sampling Project Description	Sampling Project Code	Number of Samples FY 2020		Number of Samples FY 2021
		Planned	Actual	Planned
NARMS-Beef Cows	NARMS_BC	456	478	456
NARMS-Veal (Bob Veal, Formula-Fed Veal, and Non-Formula-Fed Veal)	NARMS_BV, NARMS_FFV, NARMS_NFFV	480	416	480
NARMS-Dairy Cows	NARMS_DC	980	982	980
NARMS-Heifers	NARMS_HF	456	494	456
NARMS-Steers	NARMS_ST	1,368	1,168	1,368
NARMS-Mesenteric Lymph Nodes in Beef Cow, Dairy Cow, Heifer, and Steer	NARMS_BC_MLN, NARMS_DC_MLN, NARMS_HF_MLN, NARMS_ST_MLN	300	230	300
NARMS-Market Swine	NARMS_MS	860	791	860
NARMS-Sows	NARMS_SW	410	420	410
NARMS-Goat	NARMS_GO	100	97	100
NARMS-Lamb	NARMS_LB	100	97	100
NARMS-Sheep	NARMS_SH	100	97	100
NARMS-Young Chickens	NARMS_YC	690	638	690
NARMS-Young Turkeys	NARMS_YT	435	397	435

Appendix D: Other Sampling Programs

Table D1 summarizes the numbers of samples in FSIS' sampling programs other than microbiological and chemical residue sampling programs for FY 2020 and FY 2021.

Table D1: FY 2020 and FY 2021 Sample Numbers for FSIS Sampling Programs other than Microbiological and Chemical Residues

Sampling Project Description	Sampling Project Code	Number of Samples FY 2020		Number of Samples FY 2021
		Planned	Actual	Planned
Domestic AMR – Beef[1]	AMR01	150	92	150
Import AMR – Beef [1]	IMPAMRBEEF	10	0	10
Follow-up AMR01 – Beef[1,2]	FAMR01	NA	0	NA
Foodborne Illness and Outbreak Sampling[3,4]	Various	7,000	530	7,000
Label Verification for Nutrient Content – Raw Ground Beef	EXP_LV_NUTR	200	28	200
Label Verification – Allergens[5]	EXP_LV_SOY	200	5	200
Label Verification – Antibiotic Free[5]	EXP_LV_ABX	400	175	400
Label Verification – Hormone Free[5]	EXP_LV_HORM	200	7	200
Species Identification – Collector Generated	SPECID	NA	0	NA
Import Species Identification	IMPSPECIESID	250	391	250
Food Chemistry – Collector Generated[5]	FOODCHEM	NA	0	NA
Compliance Testing[3,6]	COMPLIAN	NA	34	NA
Pathology – Collector Generated[3,7]	Various	NA	3,361	NA
Import – Abnormal Container	IMPABNCONT and ABNCONT	NA	4	NA

Abbreviation: AMR, advanced meat recovery.

[1] FSIS collects samples in regulated establishments to test for AMR processes to verify that industry is preventing beef spinal cord material from entering the food supply and being misrepresented as meat. If an AMR sample is positive, additional samples are assigned to the establishment in PHIS through the FAMR01 sampling.

[2] Dependent on positive findings from the AMR01 sampling project.

[3] Samples for these projects are not planned in advance, but rather an inspector in the field can collect a sample on the basis of their findings or other circumstances. The planned samples for the Foodborne Illness and Outbreak Sampling are a baseline of 2,000 samples plus a calculated projected number of samples that includes the follow-up sampling. Since follow-up sampling is notated as TBD throughout the appendices, this notates the allocations set aside for all follow-up sampling and outbreak events. Actual values for follow-up sampling are located within their respective product class tables.

[4] FSIS collects and analyzes food samples potentially related to foodborne disease outbreaks. Analyses are conducted to identify and further characterize organisms in outbreak samples.

[5] FSIS performs food and residue chemistry analyses to identify mislabeling, economic fraud, and adulteration of meat, poultry, and egg products.

[6] FSIS investigators collect compliance samples at in-commerce businesses on a "for-cause" basis in response to complaints, allegations, and observations during routine or for-cause surveillance activities.

[7] FSIS carries out diagnostic and consultative pathology services to identify diseases, parasites, and related conditions in response to the needs of field operations.

Appendix E: Terms, Definitions, and References

Terms and Definitions

Analyses: A target detection methodology is applied to a sample based on the sampling project.

Analytes: The target of detection in the analysis, whether it is for microbiological pathogens, chemical residues, pathology diagnoses, or other various analyses.

Analyzed: A sample was processed by the laboratory.

Beef Manufacturing Trimmings: Product trimmings produced from cattle slaughtered onsite.

Bench Trim: Product trimmings derived from cattle not slaughtered onsite (i.e., purchased product).

Comminuted: Product that has been ground, mechanically separated, or hand- or mechanically deboned and further chopped, flaked, minced, or otherwise processed to reduce particle size.

Distributed: FSIS sampling task scheduling algorithm results in a sampling task to appear in PHIS. The algorithm may set to over distribute samples in order to compensate for predicted under performance in a particular sampling project. This excess distribution is often referred to as "over scheduling."

Follow-up sampling: Sampling that is a result of failed standards or moving windows.

Performed: A sample was collected and submitted to the laboratory.

Planned: Quantity of samples identified by the workgroup and annual FSIS Sampling Plan.

Routine Sample: Sample collected for sampling projects which are planned with predicted collection frequencies based on establishments' regular operations. Positive routine samples, or other unpredicted events, may trigger additional sample collections whose samples would not be considered "routine."

Sampling Plan: A comprehensive annual Agency issuance which identifies the planned sampling programs, including statistical and policy basis, for a fiscal year. The data-driven strategic planning effort for microbiological and chemical residue sampling activities are aligned with the Agency's Strategic and Annual Plan priorities.

Sample Scheduling Frequency: The sampling frequency targeting the number of samples collected on an annual basis instead of focusing on specific collection rates. In order to collect samples from infrequent producers and optimize the total number of samples collected and analyzed, FSIS adjusts the number of samples being scheduled based on the average number of samples collected throughout the sampling year.

Scheduled: A sample is specifically designated a collection date by the FSIS user in PHIS. A FSIS user may not be able to schedule all of the samples distributed to a particular establishment due to factors such as eligible project availability and other inspection activities.

Windows: An established timeframe FSIS uses to calculate categorization. For example, poultry performance standards use the results from the past 52 weeks to determine what category the establishment is.

References

Links to Agency Planning Documents

FY 2017-2021 FSIS Strategic Plan: //www.fsis.usda.gov/wps/wcm/connect/317d14d6-1759-448e-941a-de3cbff289e5/Strategic-Plan-2017-2021.pdf?MOD=AJPERES

Past Annual Plans: //www.fsis.usda.gov/wps/portal/informational/aboutfsis/strategic-planning

Links to Agency Sampling Plans and Programs

Past Annual Sampling Plans: //www.fsis.usda.gov/wps/portal/fsis/topics/data-collection-and-reports/fsis-data-analysis-and-reporting/data-reporting

Food Safety and Inspection Service Microbiological and Residue Sampling Programs: //www.fsis.usda.gov/wps/wcm/connect/0816b926-c7ee-4c24-9222-34ac674ec047/FSIS_Sampling_Programs_Report.pdf?MOD=AJPERES

Links to Posted Sampling Datasets

FSIS Data Collection and Reports webpage: //www.fsis.usda.gov/wps/portal/fsis/topics/data-collection-and-reports/data-collection-and-reports

Links to Agency Directives

FSIS Directive 10,400.1: //www.fsis.usda.gov/wps/wcm/connect/09bf6ed8-1e4b-4ef5-a3e1-fa454b116b8e/10400.1.pdf?MOD=AJPERES

Links to NARMS information

CDC NARMS website: //www.cdc.gov/narms/reports/

FDA NARMS website: //www.fda.gov/AnimalVeterinary/SafetyHealth/AntimicrobialResistance/NationalAntimicrobialResistanceMonitoringSystem/default.htm

USDA NARMS website: //www.fsis.usda.gov/wps/portal/fsis/topics/data-collection-and-reports/microbiology/antimicrobial-resistance/narms