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Managing Risk:

Costs, Regulations and Food Safety for On-farm Poultry Processing in Tennessee

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CENTER FOR PROFITABLE AGRICULTURE
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Foreword

In the past few years the Center for Profitable Agriculture has had many inquiries from Tennessee poultry growers looking for guidance concerning the rules and regulations for on-farm poultry processing. This interest prompted the Center to put together a planning team of independent poultry producers and processors, regulatory officials, Extension specialists, agents and others interested in value-added poultry that would identify and clarify topics related to costs, regulations and food safety for would-be poultry processors. Presentations on these topics were developed and delivered by regulators, educators and processors at three all-day workshops across the state and these presentations were compiled into this publication. By understanding the costs, rules and regulations, we hope producers interested in on-farm processing will be better equipped to manage the risks of poultry processing.

The information contained in this document is a good-faith attempt to condense details that relate to poultry processing into a form that is understandable and applicable to small scale poultry processing operations. This booklet cannot be relied upon as legal advice and is not an official statement of policy. If a reader has a specific regulatory or food safety issue, he or she should consult with the appropriate regulatory agency.

Appreciation is extended to the members of the planning team—Erica Alexander, Walter Bates, Janie Becker, Ron Blair, Mike Brown, Amanda Carter, Faith Critzer, Matthew Ernst, Kim Frady, Irene Hanning, Brad Harris, Kevin Hensley, Sam Kennedy, Megan Leffew, Shanna Lively, Dwight Loveday, Kathleen McAnally, Wade Murphy, Karen Overton, Brad and Tracy Smith, Maggie Smith, Wendy Sneed, Chris and Sandy Watson, Marshall Williams and James Yoder—for their help in identifying and clarifying topics included in this publication.

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The material contained in this document is a summary of materials presented at workshops in January of 2015. It is intended for use in future workshops and one-on-one discussions with producers and Extension agents. The information is correct as of the time of writing but it is important to recognize that regulations and interpretations may change.

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Introduction

The federal Poultry Products Inspection Act of 1957 requires the United States Department of Agriculture's Food Safety and Inspection Service (USDA-FSIS) to inspect all domesticated birds when slaughtered and processed into products for human consumption. The main goals of the law are to prevent adulterated or misbranded poultry and products from being sold as food, and to ensure that poultry and poultry products are slaughtered and processed under sanitary conditions. This law also established exemptions for the on-farm slaughter of poultry for commercial sale. These exemptions, which may be subject to further regulations within each state, allow poultry producers to process certain poultry for sale without the on-site presence of USDA inspectors. A 1975 federal law further specified that the Poultry Products Inspection Act applies to poultry processed in Tennessee and certain other states. In 2014, the Tennessee legislature passed a law related to on-farm poultry slaughter in Tennessee under USDA exemptions.[1] It allowed the Tennessee Commissioner of Agriculture to recognize the federal exemptions.

Small-scale broiler production in Tennessee is increasing. According to the U.S. Census of Agriculture, the number of Tennessee farms selling fewer than 2,000 broilers increased, between 2007 and 2012, from 123 farms to 276 farms. The Census reports the number of larger poultry farms in Tennessee – those producing 30,000 or more broilers – declined from 2007 to 2012, from 538 to 323 farms.

The increase in smaller broiler farms has resulted in more interest in on-farm poultry processing. In early 2015, the Center for Profitable Agriculture hosted a series of three workshops across Tennessee to inform poultry producers about risks of on-farm processing and how to manage them. The decision to process poultry on the farm is complex, requiring producers to weigh potential risks – from legal and regulatory concerns to food safety and financial risks. This publication uses presentations from the workshops to help producers understand these risks and how to deal with them, who to contact with questions and the criteria for on-farm processing.

Options for On-farm Poultry Processing

Tennessee broiler production totaled 30.4 million birds in 2012. Most of those broilers were produced under contract with integrators and slaughtered at facilities operating under a USDA grant of inspection. However, educators report sustained interest in smaller-scale poultry production, including sustainably raised, pasture-fed and organic systems. In an online survey of Georgia consumers between 2008 and 2010 approximately 97% of the respondents expressed an interest in supporting efforts to make sustainably raised poultry processed in Georgia available.[2] Access to processing and slaughter can be a market access barrier for smaller growers.

Independent Tennessee poultry growers can choose from three options for processing poultry. Potential risks and rewards from each option will vary according to producer location, production system and local markets. The three options include:

1. **Pay a fee to process at a plant operating under a USDA grant of inspection**

   A plant operating under a USDA grant of inspection will receive bird-by-bird inspection by an on-site USDA inspector. Birds receive a USDA stamp and the poultry may be marketed across state lines.

[1] Tennessee Code Annotated § 53-7-209 (a)(5): "The commissioner shall, by regulation and under conditions as to labeling, and sanitary standards, practices, and procedures that the commissioner may prescribe, exempt from specific provisions of this part: Poultry producers and growers acting in compliance with exemptions established in the federal Poultry Products Inspection Act, compiled in 21 U.S.C. § 451 et seq."

[2] E. J. Van Loo, W. Q. Alali, S. Welander, C. A. O'Bryan, P. G. Crandall and S. C. Ricke, Consumers' Interest in Locally Raised, Small-Scale Poultry in Georgia, Agriculture, Food and Analytical Bacteriology, June 30, 2015.

Niko and Co., a Tennessee processor operating under a USDA grant of inspection in Walling, was available to independent Tennessee producers as of December 2015. Three USDA-inspected processors in Kentucky – SS Enterprises in Bowling Green, Marksbury Farm Market, near Danville and Misty Lea Farm near Hopkinsville – were also available to Tennessee producers. Foothills Pilot Plant, near Asheville, N.C., also processes birds from independent and smaller poultry producers. Processing fees at such plants are usually prorated depending on the number of birds processed at one time. The owner must also provide transport to and from the processing plant.

2. Process on-farm under USDA grant of inspection

A poultry producer may choose to build his or her own processing plant to operate under a USDA grant of inspection. This plant may process the producer's own birds, birds purchased from other producers and birds owned by other producers. The inspected birds receive a USDA stamp and may be marketed across state lines.

Producers interested in this option should notify USDA of their interest to receive explanations of building and equipment specifications. At the time of writing, there was one on-farm plant in west Tennessee processing poultry under USDA grant of inspection. It only processes birds raised by this farm and does not offer its services to other producers.

3. Process on-farm under USDA exemption

Producers may also choose to process poultry on the farm under one of three USDA exemptions. While these exemptions do not require a USDA inspector to be present to examine each bird processed, *farms processing under a USDA exemption are subject to inspection at any time*. Even though on-farm facilities may be small, exempt processors must meet the same standards for cleanliness and food safety as larger facilities with inspectors on-site. It is important to note that processors operating under these exemptions are not allowed to perform custom slaughter and processing of birds belonging to others.

Figure 1. Glendale Farm in middle Tennessee processes under the Producer/Grower 20,000 Bird Exemption

Table 1. Summary Table of USDA Exemptions and Limitations

Criteria	Producer/Grower 1,000 Bird Limit	Producer/Grower 20,000 Bird Limit	Producer/Grower or Other Person 20,000 Bird Limit
Slaughter Limit	YES – 1,000 per calendar year	YES – 20,000 per calendar year	YES – 20,000 per calendar year
Further Processing	YES	YES	YES
Can sell to any customer	YES	YES	NO
Can sell to Hotels, Restaurants and Institutions (HRIs)	YES	YES	NOT TO ALL Hotels, Restaurants and Institutions (HRIs)*
Sell to Distributor	YES	YES	YES
Sell to Retail Store	YES	YES	NO
Intra-State Distribution	YES	YES	YES
Inter-State Distribution	NO	NO	NO

*Product produced under the Producer/Grower or Other Person Exemption may not be sold to institutions

Source: Guidance for Determining Whether a Poultry Slaughter or Processing Operation is Exempt from Inspection Requirements of the Poultry Products Inspection Act. USDA Food Safety and Inspection Service, Revision 1, April 2006.

A limitation of the USDA exemptions, as shown in Table 1, is that poultry processed under exemption may not be sold across state lines. Producers should also note that poultry processed under the Producer/Grower or Other Person exemption cannot be sold to either institutions or retail stores.

Identifying the Market

Before a new farm enterprise is launched, careful analysis of the market potential for the product should be conducted. This analysis should address the following questions:

- Is there a need for the product to be produced?
- Who are the potential customers and why will they purchase the product?
- How will you (the producer) reach and/or find the potential customers?
- Where will financial resources to start the enterprise come from?
- What price will need to be charged to cover costs?

The first three questions involve "market discovery" and will be answered by understanding your local market and potential customers. Remember that any farm enterprise analysis should include a marketing plan. A target market might appear to potentially be well-served by processing on-farm under one of the USDA exemptions but a risk evaluation and financial analysis might show that on-farm processing may not meet the farm's marketing goals. For example, if a farm is located near state lines and wants to sell its poultry across state lines, on-farm exempt processing would not achieve that marketing goal. New and expanded farm enterprises should always be evaluated with a thorough study of the product's market potential.

The last two questions hinge on a key piece of knowledge: accurately estimating how much it will cost to process poultry on the farm. It is important to carefully consider these costs, as well as the costs of production and marketing, to determine whether the meat can be sold at a price that covers all these costs.

The next section will deal with the financial risks associated with processing on-farm and compare the costs of processing on-farm to paying a fee for USDA-inspected processing.

Managing Costs Risk

Producers should conduct careful financial analysis before building a facility and processing poultry on the farm under a USDA exemption. This section identifies the major financial risks associated with on-farm processing and presents financial management principles to aid in the decision-making process.

Insurance and Product Liability

An on-farm poultry processor may become subject to increased liability risks. Food producers and processors could be liable for foodborne illnesses that may have originated with their products. It is highly advisable that farms processing poultry under a USDA exemption carry some level of product liability insurance.

Typical product liability insurance policy levels range from $500,000 to $2 million. Product liability insurance can sometimes be added to existing business liability coverage; consult with insurance professionals for policy details and costs. This is a reasonable way to provide some peace of mind and protection of liability for the producer in the case of the unthinkable.

Costs of Processing

The discussion that follows provides a template for analyzing the costs of processing on a very small scale—just under 3,000 birds annually under the Producer/Grower 20,000 Bird Exemption. This template assumes the producer will do the slaughtering and hire two workers to assist with the processing. They will process up to 100 birds in four to six hours, including cleanup. Note that the template is not intended to reflect the actual costs for a specific farm. It does not include the costs of raising the birds or for marketing and transporting the meat since that is outside the scope of this publication. Also no charge has been assigned for the producer's labor in processing. When analyzing the costs and potential returns from the processing activity, consideration should be given to the value of the producer/processor's labor.

Costs in a budget may be categorized as fixed, or establishment costs and variable costs. Understanding the differences between these types of costs can help in assessing the financial viability of the enterprise.

Fixed costs do not change with the quantity produced. A poultry plucker has the same purchase price whether it is used for one chicken or one hundred. Common fixed costs for on-farm poultry processors include:

Facility: Septic system, building, finish grading

Slaughter equipment: Kill cones, scalder, plucker

Processing equipment: Tables, carts, knives and cutting boards

Labeling equipment: Scales, printer

Cooling equipment: Chill tank, freezer, ice maker

Product handling: Coolers

Producers using well water may also need to purchase a UV water sanitizer to maintain water quality to USDA standards.

Table 2 lists the estimated fixed costs for an on-farm processing building that will accommodate processing 2,975 birds annually. Poultry processing in Tennessee is only allowed in an enclosure with cleanable walls and ceiling. There must also be a system in place to sanitarily dispose of waste and wastewater. Facility costs include a 16' x 40' building with floor drain and cleanable walls, site preparation, installation of a septic tank, graveled parking lot and signage. When choosing to build or retrofit an existing facility, it is important to consider the volume of birds to be processed and whether the facility and equipment will provide the capacity to process more birds if desired. In this example total facility costs are estimated at $30,700 and the annual charge for depreciation is $1,240.

Table 3 details the estimated fixed costs for equipment to be used by the producer and two employees who will slaughter and process up to 100 birds in four to six hours, including cleanup. Equipment includes kill cones, scalder, plucker or picker, tables, chill tank, ice maker, carts, knives, cutting board, coolers, UV sanitizer, scales, laptop, printer and freezer. Total equipment cost is estimated at $14,885 and depreciation is $1,377.

The investment in fixed costs has been divided by the estimated years of life for each asset to arrive at an annual economic depreciation for each item. This annual economic depreciation is included as an operating cost in Table 4.

Table 2. Estimated Facility Costs for On-Farm Poultry Processing

	Total Cost	Years Life	Annual Economic Depreciation
Facility			
Building 16'x40' with floor drain and cleanable walls	$25,000	25	$1,000
Site Prep, Septic Tank, Finish Grading, Utilities	$5,000	25	$200
Parking Lot Gravel	$500	25	$20
Signage	$200	10	$20
Total Facility	**$30,700**		**$1,240**

Table 3. Estimated Equipment Costs for On-Farm Poultry Processing

	Total Cost	Years Life	Annual Economic Depreciation
Kill Cones (3)	$150	20	$8
Poultryman 30" Rotary Scalder	$3,165	15	$211
Poultryman 23" Poultry Plucker	$1,790	25	$72
Tables, Chill Tank, Freezer Thermometers	$700	20	$35
Ice Maker	$4,000	10	$400
Carts, Knives, Cutting Board	$380	10	$36
Coolers (15 @ $100)	$1,500	10	$150
UV Sanitizer	$1,000	10	$100
Scales, Laptop, Printer	$1,700	5	$340
Freezer	$500	20	$25
Total Equipment	**$14,885**		**$1,377**

Variable costs are costs that may be adjusted within a production cycle. One may adjust variable costs as conditions change. For example, if demand for processed poultry is high, the decision may be made to produce and process more chickens. As more chickens are processed, more labor will be required to process them. Typical variable costs for on-farm poultry processors include:

Figure 2. Example of Scalder

- Labor for slaughter and processing
- Packaging and labeling
- Cleaning
- Utilities used to heat water for processing
- Composting of waste
- Repairs

Table 4 lists the estimated operating costs for on-farm processing of 2,975 birds annually. It does not include any charge for the costs of raising birds, marketing or transporting poultry meat. It also does not include any charge for the operator's labor in these activities or in processing.

The template is based on a producer processing 2,975 birds annually (3,500 baby chicks are placed and survivability is estimated at 83%.) Survivability will vary according to conditions and management.

Labor is a key operating cost. The availability of processing labor is critical to the success of the processing enterprise. In this template labor is hired for processing at a cost of $2.00 per bird ($5,950) and FICA and Medicare taxes, workers' compensation and federal and state unemployment taxes were paid on the hired labor. Workers compensation is required by law on hired processing labor and provides protection to the processor in the event of worker injury.

Packaging includes the cost of bags and labels with information required by Tennessee Department of Agriculture and USDA. An annual permit ($5) for the scales used to weigh product must be obtained from the Weights and Measures Section of the Tennessee Department of Agriculture. Cleaning supplies must be purchased to clean the equipment after processing and immediately prior to processing. Utilities (water, electricity, propane, gas, phone) must be considered; in this template the water source is a well. It takes about one tank of propane to heat the water for processing 100 birds—29 tanks of propane are included at a cost of $435. Waste is disposed of through composting ($300 for wood chips) and wastewater is disposed through a septic system. Pest control is budgeted at $25 for rodent traps and wasp spray.

Insurance expense of $2,100 annually includes product liability insurance which provides protection in the event of a customer getting a foodborne illness like Campylobacter and Salmonella. Costs of repairs ($650) and accounting ($150) are also included.

Depreciation on the facility and processing equipment is based on the costs of the facility and equipment and its useful life. Economic depreciation costs for the facility and equipment detailed in Tables 2 and 3 are included as operating costs in Table 4. Total processing operating costs are estimated at $15,175, or $5.10 per bird.

Figure 3. Example of Plucker

Table 4. Estimated Operating Costs for On-Farm Poultry Processing

	Quantity	Unit	$/Unit	Total Dollars
Labor				
Slaughter (labor provided by producer—no value has been assigned)	2,975	Birds	0.00	$0
Processing (hired labor)	2,975	Birds	2.00	$5,950
FICA/Medicare taxes on hired processing labor	$5,950	Dollars	.0765	$455
Unemployment tax	$5,950	Dollars	.033	$196
Workers' compensation	$5,950	Dollars	.20	$1,190
Packaging, labels	2,975	Bags, labels	.23	$684
Scales permit		Annual	5.00	$5
Cleaning supplies		Annual	58.00	$58
Utilities				
Water				
Electricity	12	Months	$30	$360
Propane	29	Tanks	$15	$435
Gas				
Phone				
Waste/wastewater disposal				
Composting		Annual	$300	$300
Pest control		Annual	$25	$25
Insurance (farmowners and product liability)	12	Months	$175	$2,100
Repairs		Annual	$650	$650
Accounting		Annual	$150	$150
Economic depreciation				
Facility		Annual	$1,240	$1,240
Processing equipment		Annual	$1,377	$1,377
Total Operating Costs	**2,975**	**Birds**	**$5.10**	**$15,175**

Discussion of Estimated Processing Costs

A processing cost of $5.10 per bird is calculated based on these costs which includes no charge for the producer's labor. A significant capital expense ($30,700) is required for facility establishment. Furthermore, the equipment expense for startup is estimated at $14,885. The time it would take to recoup that capital expense would vary based on selling price per bird and the average number of birds processed per year; however, a producer could expect multiple years before recouping that entire estimated capital cost.

One way to reduce financial risk from a new farm enterprise is to reduce cash costs. Producers already owning some processing equipment could reduce their initial cash cost; however, that equipment cost still needs to be included in the cost of production to reach an accurate cost estimate. Another potential cost savings could come if a farm is able to improve or retrofit an existing building or site to meet USDA processing facility standards.

Figure 4. Use thermometers to verify temperatures and keep frozen products frozen.

Another way to reduce fixed costs (depreciation) per bird in the enterprise budget is to process more birds with the facility and equipment. Once markets have been developed, it may make sense to produce more birds and increase the number of birds processed. While this would lower fixed costs per bird, consideration must be given to the added costs of production and marketing associated with expanding production.

For producers close enough to a USDA-inspected processing facility, it may be more economical to get their birds processed at such a facility. The next section compares the cost of on-farm processing to paying a fee for processing at a plant operating under a USDA grant of inspection.

Tennessee poultry producers involved in Value Added Production may be eligible to receive assistance for purchasing poultry processing equipment through the Tennessee Department of Agriculture (TDA) Tennessee Agriculture Enhancement Program (TAEP). The TAEP Producer Diversification Program awards cost share funds based on an annual application process. More information about the program, including application deadlines, may be found at http://www.tn.gov/agriculture/enhancement.

Comparison of On-Farm Processing to Paying a Fee for USDA-Inspected Processing

Producers should compare the possible profitability from on-farm poultry processing with other farm enterprises to determine which offer the best opportunities for returns. Producers located in some proximity to a USDA-inspected poultry processing facility should compare the cost of on-farm processing with the cost of paying to have their poultry processed at a plant operating under USDA inspection. Table 5 lists the cost of on-farm processing and the costs of contract processing at a USDA-inspected facility, including fuel for Example 1. The producer will make two round trips to deliver the birds and pick up the meat for each batch of birds. No cost is added for the producer's labor in making these trips, though the producer may want to consider the value of this labor when evaluating this activity. If an employee is paid to do the hauling, the cost of the employee's labor should be totaled and divided by the number of birds processed.

Table 5. Cost Comparison: On-farm Processing vs. Paying Fee for USDA-inspected Processing

Cost of on-farm processing	$5.10
Contract processing fee at USDA-inspected facility	$4.00
Fuel costs to/from processor ÷ number of birds	$.26
Labor costs (delivery, pickup) ÷ number of birds	$0

Example 1

A producer 80 miles from a USDA-inspected processing facility is considering building an on-farm facility to process exempt poultry versus contracting for processing at the USDA-inspected facility. The cost of on-farm processing is estimated at $5.10 per bird. The producer expects to have 2,975 birds per year available for processing and the fee for contract processing at the USDA-inspected facility is $4.00 per bird. Twelve batches of birds will be hauled to and from the processor and return trips will be required to pick up the processed product. What is the estimated total cost of processing at the USDA-inspected facility?

$4.00 processing fee + (320 miles/batch x 12 batches x $0.20 fuel cost per mile)/2,975 birds

$4.00 +$0.26 = $4.26 per bird

The total cost to get a bird processed at the USDA-inspected plant, $4.26, would be less for this producer than the cost of building a facility and processing on the farm, $5.10. There would also be no financial risk from building and operating a processing plant. The processing cost is sensitive to the distance of the processing plant from the farm; increasing that distance increases the cost of processing. Table 6 shows the total cost (including the contract fee for processing, fuel and labor) for distances of 80, 150 and 300 miles from the farm. No cost has been added for the producer's labor in hauling birds and meat. Based on the assumptions in this example, farms 300 miles or less from a USDA-inspected plant would incur costs lower than $5.10 per bird.

Table 6. Cost for Contract Processing (including fuel and labor for transportation) at a USDA-inspected Plant in Example 1

Miles to USDA-inspected plant	Fuel Cost (per Bird)	Labor Cost (per Bird)	Contract Processing Fee (per Bird)	Total Cost (per Bird)
80	$.26	$0	$4.00	$4.26
150	$.48	$0	$4.00	$4.48
300	$.97	$0	$4.00	$4.97

Producers whose on-farm processing costs are projected to be lower than the cost of contracting for processing at a USDA-inspected facility may decide to build a facility and process on-farm. The following checklist has been developed to aid producers in managing the costs risks associated with on-farm processing.

Costs Risks Checklist

- □ Identify target market for poultry processed on the farm
- □ Contact insurance professional for product liability insurance policy information and/or quote
- □ List all facilities and equipment needed to complete on-farm processing, including cost estimates
  - – Facility: Septic system, building, finish grading
  - – Slaughter equipment: Kill cones, scalder, plucker
  - – Processing equipment: Tables, carts, knives and cutting boards
  - – Packaging equipment: Scales, printer
  - – Cooling equipment: Chill tank, freezer, ice maker
  - – Product handling: Coolers
- □ Develop processing budget estimates for my farm situation
  - – Fixed costs for facilities and equipment
  - – Operating costs of on-farm processing
- □ Compare cost of on-farm processing with other available processing options

The next section will describe the legal and regulatory risks for on-farm poultry processing in Tennessee.

Photo credit: Katharos Farm

Legal and Regulatory Risks

Tennessee State Law and Policy

The Tennessee General Assembly passed law SB 1707 in 2014. The law clarifies that Tennessee poultry producers and growers acting in compliance with USDA/FSIS exemptions are "exempt by regulation" from specific provisions of the Tennessee Meat and Poultry Inspection Act.

In 2015, the Tennessee Department of Agriculture (TDA) issued the following statement of guidance:

The sale or process of poultry products in Tennessee is governed predominantly under the federal Poultry Inspection Act. 21 U.S.C.A. §451, et seq.; 9 C.F.R. §381.221; Tenn. Code Ann. §53-7-214. Consistent with exemptions available under the federal law for small poultry producers, no inspection or other regulation is currently required by TDA for small poultry producers if they are otherwise compliant with the conditions of their federal exemption. See 21 U.S.C.A. §464.

Upon request, TDA will provide a letter to any exempt poultry processor to explain this position and will educate potential marketing outlets in Tennessee that a poultry permit from TDA is not required to process and to sell poultry under this federal exemption.

This statement means that TDA will not inspect poultry processed under USDA exemption. Because the TDA does not have "eyes on" those products, the TDA will not issue retail meat permits to individuals processing under the exemption. However, TDA will work on behalf of producers whose market outlets require a retail meat permit to explain TDA's position that retail sales of exempt poultry are allowed without a retail meat permit. Producers needing assistance with this process should contact **Mike Brown**, TDA Consumer & Industry Outreach Coordinator, at **615-837-5177** or email **mike.f.brown@tn.gov**, for available resources.

Producers selling meat by weight must use an inspected and permitted legal for trade scale. The scale must be an approved legal for sale scale and the scale must be inspected by the Weights and Measures Section of the Tennessee Department of Agriculture. To contact the Weights and Measures Section, call **615-837-5019**.

Federal Law and Policy

The Poultry Products Inspection Act (PPIA) is found in Sections 451 to 470 of the United States Code.[3] The 1957 version of the PPIA was amended in 1968, and the amended law stipulates that businesses that slaughter poultry in states that do not offer state inspection of poultry are subject to USDA inspection – unless they meet requirements for the exemptions summarized in Table 1. According to USDA guidance:

"To qualify for any one of the poultry exemptions, a business must slaughter poultry or process poultry products under sanitary conditions using procedures that produce sound, clean poultry products fit for human food."[4]

Producers planning to process poultry under exemption should contact their local FSIS officials or the Small Plant Help Desk to make sure their planned facilities are in compliance with USDA requirements.

The contact information for local FSIS officials and the Small Plant Help Desk is:

- **Kathleen N. McAnally, DVM, FLS**
  USDA FSIS OFO
  Phone: **601-927-9920**
  Email: **Kathleen.McAnally@fsis.usda.gov**
- **Marshall K. Williams, Investigator**
  USDA FSIS Office of Investigation, Enforcement and Audit
  Phone: **615-736-7703**
  Email: **Marshall.Williams@fsis.usda.gov**
- **Small Plant Help Desk Contact Information**
  Small and Very Small Plant Outreach
  Small Plant Help Desk

  Need immediate assistance?
  Contact the Small Plant Help Desk!
  Phone: **877-FSIS-HELP (877-374-7435)**
  Email: **InfoSource@fsis.usda.gov**
  Website: **http://www.fsis.usda.gov/wps/portal/fsis/programs-and-services/contact-centers/small-plant-help-desk**

[3]A copy of the PPIA is available at the USDA/FSIS website: http://www.fsis.usda.gov/wps/portal/fsis/topics/rulemaking/poultry-products-inspection-acts/PPIA

[4]USDA/FSIS, "Guidance for Determining…" p. 3.Email: Kathleen.McAnally@fsis.usda.gov

Producers may also go to **askFSIS.custhelp.com** for answers to questions about processing. askFSIS contains a knowledge base of questions and answers that is searchable and automatically routes new questions that users submit to the appropriate staff. Answers from askFSIS are official responses from the Agency and carry regulatory authority.

A producer may process poultry under one of the three USDA exemptions per calendar year. The exemption may be changed from year to year; for example, a producer that starts under the Producer/Grower 1,000 bird exemption and sees business grow could change to the Producer/Grower 20,000 bird exemption in the following year.

The following criteria apply to all three exemptions:

1. Producers may only slaughter the number of healthy birds defined under the exemption.
2. Slaughter and processing may only be conducted under sanitary conditions that produce poultry products fit for human food (unadulterated)
3. The producer must keep records of the number of poultry slaughtered and sold, to verify numbers meet the exemption
4. The poultry products may only be sold in Tennessee. Poultry processed under federal exemption may not be sold in a state different than where it was raised and processed.

Other criteria must also be met for each exemption:

Producer/Grower 1,000 Bird Exemption

- Limited to no more than 1,000 birds
- The producer/grower may only process poultry raised on his or her own farm.

Producer/Grower 20,000 Bird Exemption

- Limited to no more than 20,000 birds
- The producer may only distribute poultry products produced under the exemption
- The facility is not used to process another person's poultry, unless exemption has been granted
- Shipping containers must meet labeling requirements (See section on Product Labeling)
- Equipment may be rented or leased for processing; however, that equipment may not be used to process another person's poultry while it is on the producer/grower's premises.

Producer/Grower Other Person 20,000 Bird Exemption

- Limited to no more than 20,000 birds
- Poultry may not be sold to retailers (grocery stores) but may be sold to institutions preparing meals sold directly to consumers
- May not slaughter poultry belonging to another person; however, the Producer/Grower Other Person may purchase poultry from others for slaughter.
- May only process and/or distribute poultry that the Producer/Grower Other Person has slaughtered
- Shipping containers must meet labeling requirements

USDA Inspection Criteria for Exemptions

The three exemptions outlined above allow a producer to slaughter poultry on their farm without a USDA inspector present at slaughter. However, the exempt producer may be subject to USDA inspection at any time. Producers should follow USDA/FSIS guidelines and cooperate with inspection staff to ensure poultry slaughter is completed according to requirements. Failure to meet USDA standards for poultry processing poses various risks to the poultry producer's enterprise including, but not limited to, possible condemnation of product and risk of losing the on-farm exemption. Contacting the USDA/FSIS, before processing under exemption, is a best practice to manage this risk.

The section below outlines general guidelines for on-farm facilities used to process poultry. More detailed facility requirements can be found at the USDA/FSIS Small Plant Help Desk website, **http://www.fsis.usda.gov/wps/portal/fsis/programs-and-services/contact-centers/small-plant-help-desk.**

Enclosed Structure

Open-air processing of poultry under the USDA exemption is prohibited in Tennessee. The facility must be under roof and enclosed to keep out possible rodent and insect contamination. Wire screening may be used for ventilation purposes in constructing walls; according to the 2013 FDA Food Code, screening for food establishments must be constructed of 16 mesh to 1-inch screens. Producers can verify screen specifics with USDA/FSIS.[5]

[5]Food Code. 2013 Recommendations of the United States Public Health Service Food and Drug Administration Accessed at www.fda.gov.

Floors, Walls and Ceilings

The floors, walls and ceilings of the processing facility must be of impermeable material that can be cleaned and sanitized. Water must be able to drain from the impermeable floor or be collected and disposed of in a sanitary manner. Tennessee producers should expect to be asked whether they have contacted the Tennessee Department of Environment and Conservation concerning a wastewater disposal plan, including the possibility of required permits, when contacting USDA/FSIS about possible exempt poultry processing.

Common wall construction materials for small-scale poultry processing facilities include wire mesh screen, concrete block covered with epoxy paint and plastic "whiteboard." Ceilings should be constructed in a way that eliminates possible condensation dripping down into the processing area. Electric lights on the facility interior must be enclosed.

The goal of all these guidelines is to minimize the risk of contamination from bacteria that is able to survive cleaning and disinfecting. This is why wood, a permeable material, is not to be used on processing facility walls; it is very hard to satisfactorily disinfect a wooden surface for food processing.

Separate Killing/Plucking and Processing Areas

USDA guidelines require that poultry are killed and plucked in a separate area from where the carcass is dressed. This keeps bacteria and fecal matter that may be present on the bird from contaminating meat. Exempt processors often have a two-room setup where the bird is conveyed into a segregated area after being killed and plucked. This may be as simple as handing the bird through an opening in the wall between the rooms; or, as in larger facilities, movement via a mechanical conveyor.

Additional References

All equipment used in exempt poultry processing must be routinely cleaned and disinfected. Stainless steel equipment is the standard. The most difficult piece of equipment to clean and sanitize is the mechanical plucker. Producers should allot adequate time during cleanup to complete satisfactory sanitation.

Exempt processors killing a smaller number of birds – perhaps processing once or twice per month – will need to sanitize their facility after processing is done as well as the day prior to the next processing. This ensures that equipment is sanitized for food production after having been unused for several days or weeks.

Photo credit: Katharos Farm

Risk Management Focus – Equipment

There are relatively few pieces of equipment absolutely necessary for poultry processing. The vital pieces of equipment include a means of killing the bird, good knives, scalder, plucker, cutting surface, and a way to cool the carcass. Each piece of equipment can also help producers manage the risk of poor carcass quality – or contaminated carcasses.

It is important to get equipment with the appropriate capacity so that bottlenecks will be eliminated and processing will flow as smoothly and efficiently as possible.

The following sidebar provides insight from two processors on the importance of having the proper processing equipment.

Perspectives on Processing Equipment by Two Processors

Carcass quality starts before processing with healthy birds, notes Amanda Carter, Manager of the Foothills Pilot Plant in Marion, N.C. Carter oversees the humane slaughter of more than 60,000 poultry and rabbits annually. Overcrowded birds, birds handled roughly at catching, and birds not properly removed from feed prior to slaughter will reduce the sanitation and effectiveness of processing. At the start of harvest, proper restraint using a kill cone or other humane kill method is required. “Wing joints are weak, especially in white broilers. Improperly restrained birds can show bruising and tearing,” she said. That could mean broilers that are not saleable as whole birds must be cut up to be sold – resulting in more time and expense for the producer.

A good scalder also saves time. Farm-scale scalders may take an hour – or more – to reach the proper temperature. “But I can’t afford to have all my employees waiting,” while scalders heat, said Carter; her plant features on-demand water heaters. Proper scalder temperature and timing also allows complete plucking. Scalding water should be changed as often as necessary to keep contamination to a minimum. This may mean changing water every 30-50 carcasses in the still-water scalders usually used for on-farm processing.

Plucking is long-known for being labor intensive. “A plucker is the most crucial piece of equipment in any processing operation,” said Carter. Manufactured pluckers are available; pluckers can also be built from a food-grade 55-gallon drum. Allow extra time to clean the pluckers. “It’s the most difficult piece of equipment you’ll ever clean in your life,” said Walter Bates, Hoe Hop Valley Farm.

Bates processed more than 3,000 poultry on his East Tennessee farm, near Benton, in 2014. He said that his ice machine is the second-most important piece of equipment. “It makes finely-shaved ice that goes into the chicken easy and cools that bird down below 40 degrees,” said Bates. Cooling the eviscerated chicken before packaging, or deboning and further processing, is a necessary food safety step.

Whether in a commercial plant or on the farm, stainless steel tables are best for evisceration and any further processing that is needed. For deboning the carcass, Carter recommends investing in a stainless steel or plastic deboning cone. “That keeps the chicken up off the table, makes cutting it up much easier. I also think it improves yield,” she said.

The only other required equipment, said Carter, is good knives. She strongly recommends a cut-resistant glove, for the hand not holding the knife. “Our venter goes through an $11 cut glove about every two weeks, and it is well worth the investment,” for injury prevention, she said.

Safety training for the employees and others that may be helping in the processing operation is absolutely necessary, said Carter. “You absolutely have to educate your employees,” about proper handling and food safety procedures and the risks associated with improper equipment use and calibration, she said.

When processing poultry it is important to remember the following humane handling principles:

- Welfare guidelines should balance scientific knowledge and professional expertise.
- The welfare of the chicken is foremost. It is not how humans might perceive a practice or an environment.
- Poultry should be cared for in ways that prevent, or minimize fear, pain, stress and suffering.
- Feed withdrawal should not exceed 18 hours prior to slaughter. Water withdrawal should not exceed 1 hour prior to catching.
- Chickens should be caught by the leg—never by the wings or neck.
- We are to be good stewards of chickens providing a humane death when processed for food.

The following is a suggested legal and regulatory checklist to assist on-farm processors wishing to process under the exemption.

Photo credit: Katharos Farm

Suggested Legal and Regulatory Checklist for Exempt Poultry Processors

- □ Contact Tennessee Department of Environment & Conservation to determine waste and wastewater handling plan and permit needs
  - – Approved sewerage plan, if necessary
- □ Contact USDA-Food Safety and Inspection Service (Tennessee personnel) to obtain guidelines for on-farm processing facilities
- □ Decide which exemption (only one within a given year) to process under:
  - – Producer/Grower 1,000 Bird Exemption
  - – Producer/Grower 20,000 Bird Exemption
  - – Producer/Grower Other Person 20,000 Bird Exemption
- □ Design poultry slaughter facility meeting USDA guidelines for safe food preparation:
  - – Water drainage
  - – Floors, walls, ceilings
  - – Separate kill/pluck and further processing area
- □ Purchase equipment that can be appropriately cleaned and sanitized
  - – Stainless steel
  - – Food grade equipment
- □ Label product
  - – Product is labeled properly and marked with net weight
  - – No special claims may be made

Environmental Concerns: Wastewater, Solid Waste Disposal and Air Quality

Wastewater and solid waste disposal in Tennessee is regulated by the Tennessee Department of Environment & Conservation (TDEC). This section will outline principles that small-scale poultry processors should follow to stay compliant with state environmental law and regulations.

Product processing and site cleanup generate both solid wastes and wastewater. When a producer contacts USDA/FSIS about guidelines for an on-farm processing facility, USDA/FSIS will ask the producer if they have contacted TDEC about possible water quality impact. Producers should contact the TDEC field office with jurisdiction over the county where processing will occur to determine if permitting is required. The determination is site-specific based on the volume of wastes generated, the potential for the wastes to pollute water or air, and the need to regulate the activity or use treatment to prevent pollution.

Producers contacting TDEC should have a written description of their possible processing activity. The description should include estimated volumes of wastewater and solid waste to be generated from processing. Producers should also have developed a tentative or conceptual plan for managing wastewater and, if applicable, solid waste generated from on-farm poultry processing. TDEC staff can assist producers with interpreting regulatory requirements.

Water Quality

Like any other activities conducted on Tennessee lands, on-farm poultry processing cannot have adverse impacts on water quality. Whether TDEC will require water quality permitting for wastewater generated by on-farm processing depends on the scale, design and location of the slaughter facility. A very small processor might generate minimal wastewater that could be drained onto a field or lawn with the land owner's permission. Wastewater without a human sewage component that is generated intermittently and can be repurposed without storing or treating may not require a permit. A larger exempt processor, on the other hand, may need to install a sewerage line, septic tank, a non-conventional septic system, or other treatment system to adequately handle the wastewater from processing. The key is to handle wastewater – no matter the volume – in a manner not adversely impacting water quality or the public health.

Sewerage Permits

Sewerage permits are required for construction that is plumbed for water service capable of serving lavatories, sinks, toilets or showers. Applications for these permits occur at the county level. County contacts can be identified by calling the regional TDEC Environmental Field office, at 888-891-8332. This number will automatically forward the caller to the appropriate Environmental Field Office, based on the location of the caller. A new facility could also be connected into an existing subsurface disposal system (SSDS) with adequate capacity to handle the wastewater volume. Adding onto an existing system requires approval from TDEC prior to construction of the building. All sewer installations in Tennessee must be made by a state-licensed installer.

A site-specific sewerage system operating permit may also be required, depending on the amount of wastewater discharged. The TDEC Environmental Field Office may either refer producers to the local health department (for subsurface drainage) or the state central office, in Nashville, if larger amounts of wastewater are being discharged. TDEC can provide a site-specific letter for such a determination.

Solid Waste Disposal

Chicken carcasses and offal could present the challenge of solid waste disposal. Like wastewater, solid waste may not be disposed of in a way that presents a public health hazard or creates a nuisance.

When disposing of unusual amounts of solid waste, contact the solid waste contractor to ensure the destination landfill has adequate handling arrangements. The amount is considered unusual if solid wastes will not fit into the solid waste container(s) already serviced by the solid waste service provider. Special arrangements require what is called a "special waste permit" from the TDEC Division of Solid Waste.

Byproducts of poultry processing can be composted. Be sure to comply with applicable regulations in the state's Solid Waste Disposal Act. While some composting exemptions apply, certain composting activities may require additional permitting.

Incinerators and Air Quality

Incineration of feathers, carcasses and offal is sometimes considered by poultry processors. Plans to install or operate an incinerator may also require a permit depending on the incineration equipment itself and the type of fuel used for combustion. Contact the TDEC Central Office in Nashville at 615-532-0554 and ask to speak with a "Permit Section Manager" if considering purchasing and installing an incinerator for waste disposal purposes.

Rendering

There are companies that will purchase offal and carcasses to recycle the protein into animal feeds. Often times these companies will provide storage containers and pickup of the containers when they are full. Valley Proteins is one such rendering company in Tennessee; they can be contacted at **800-476-3578**.

Product Labeling

Labeling Requirements by Type of Exemption

Poultry sold under exempt processing will be subject to Tennessee Department of Agriculture guidelines and USDA labeling guidelines.

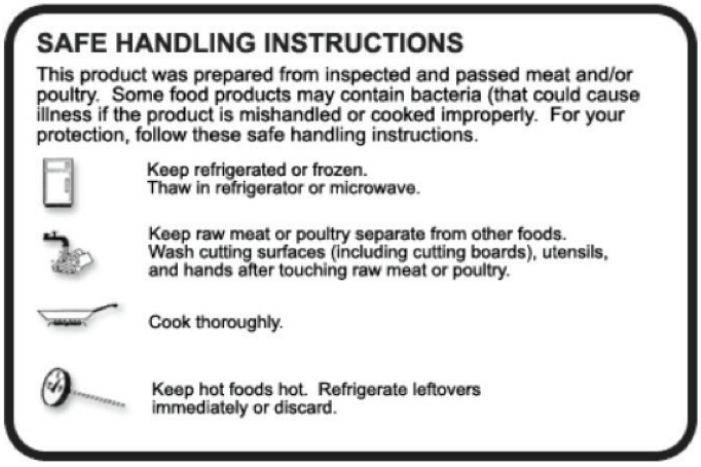

Figure 5. Use of the Safe Handling Instructions label is described in the Code of Federal Regulations, title 9, parts 317 and 381.

Exemption: Producer/Grower 1,000 bird limit

- USDA has no labeling requirement
- TDA requires product to be labeled with processor's name and address and net weight and sold by net weight

Exemption: Producer Grower 20,000 bird limit and Exemption: Producer/Grower or Other Person 20,000 bird limit

- USDA requires poultry to be labeled with:
  - Processor name
  - Processor address
  - The statement "Exempt P.L. 90-492"
  - Safe handling instructions
- TDA requires product to be labeled with net weight and sold by net weight

It is a good risk management practice to include safe handling instructions on all poultry, even in circumstances where safe handling instructions are not required by law, as for producers processing under the 1,000 bird limit.

Special Claims on Poultry Labels

Special claims – statements about how a product has been produced or claims about a product's quality or attributes – can be subject to regulation. Special claims include production claims: "certified organic," "no antibiotics added," "no animal by-products fed," and "free range" are examples of special claims.

Producers processing poultry under an exemption may not apply for or use special label claims.

Poultry farmers wishing to include special claims information on their label must have poultry processed by a facility operating under a USDA grant of inspection. The label must also be approved by the USDA/FSIS Labeling and Program Delivery Division.

The following sidebar describes how one producer deals with the disposal of waste and wastewater.

Tennessee Farm Spotlight: Walter Bates, Hoe Hop Valley Farm

Walter Bates, who farms near Benton, was the first known Tennessee farm to process poultry under the USDA exemption in a facility with a floor drain and cleanable walls. “I started mostly for our home use, then it expanded after that,” said Bates. He sells most of his poultry at farmers markets and from the farm.

Bates kills the poultry in a 6’x12’ room with concrete block construction and screen windows. Epoxy paint makes his cleanup much easier. “That epoxy is well worth the money on initial construction,” he said.

Figure 6. Walter Bates discusses equipment he uses to process under the Producer/Grower 20,000 Bird Exemption.

Keeping equipment and facilities clean and sanitized is documented in Walter’s one-sheet standard sanitation operating procedures (SSOP). “I do a cleaning and disinfecting at the end of the processing day. And then before I start processing again, whether it be the next day or a week later, we’ll do another cleaning to get things ready,” he said.

Producers should not underestimate preparation and cleanup time, said Bates. “The majority of the time is spent cleaning up. If I kill 250 broilers, it will almost take as much time to clean up as if I kill 25,” he noted.

Walter Bates said he was able to use the existing sewerage system for wastewater; he uses 275 gallons for the first 100 birds. That water usage has gone down from when he started as he has improved efficiency.

Bates composts the feathers and offal in a mix with wood chips and spent brewers grains. Safely composting takes some planning, he said. “Wood chips aren’t as easy to come by as you might think,” he said. “I get the spent brewers grains from a brewery in Chattanooga, that helps add moisture needed (in composting).”

Section Summary/Conclusion

Many of the regulatory and legal standards for sale of poultry are designed to protect the environment and consumers. The next section deals specifically with managing food safety risks for the on-farm processor.

Managing Food Safety Risk

Food safety is a critical consideration for poultry producers. Poultry and fish were the foods most frequently associated with foodborne disease outbreaks between 1998 and 2008. Salmonella and Campylobacter are by far the leading concerns in poultry food safety. Producers processing poultry on the farm under USDA exemptions can help manage and mitigate food safety through safe food handling, best management practices and rigorous attention to bird health.

Bird Health

Keeping birds healthy on the farm is a first line of defense against the foodborne pathogens Salmonella and Campylobacter. Not only will maintaining good bird health protect the birds from potentially carrying these human pathogens it will also help protect them from poultry pathogens as well. Young birds (< 1 week) are susceptible to Salmonella colonization. Typically the Salmonella that colonizes these young birds is not associated with disease in poultry; however they can be a concern if the birds or their eggs are to be eaten. Campylobacter typically colonizes the intestine of older birds (4+ weeks) It must be emphasized that it is difficult to exclude these human pathogens in poultry since they are both part of poultry normal microflora. However there are strategies that can be implemented that will minimize colonization of these foodborne pathogens, which should lead to a more wholesome product for consumption. Understanding the timing that pathogens colonize the bird is helpful for using strategies that can prevent these pathogens. Further, production practices that promote bird health and obtaining chicks from reliable sources, including participants in the National Poultry Improvement Plan (NPIP), may be helpful in preventing *Salmonella* and *Campylobacter* colonization.

Common poultry diseases, including *Mycoplasma spp.,* colibacillosis, coccidiosis and enteritis, can sweep through a flock and increase food safety risks. Meat from a broiler infected with colibacillosis, for example, is more likely to carry E. coli. USDA inspectors at a poultry processing plant operating under a grant of inspection are required to condemn infected carcasses. Exempt producers should also inspect the carcasses at slaughter and condemn carcasses with obvious signs of infection.

Diagnosis of pathogenic infection can be challenging for producers. Poultry producers experiencing bird mortality can have tissue samples tested for disease at the C. E. Kord Animal Health Diagnostic Laboratory in Nashville. This is a state run diagnostic lab that will perform necropsies on poultry for a fee. As of writing of this document the fee for a chicken is $27. More information as to costs and the types of diagnostic tests they can perform can be obtained at **https://www.tn.gov/agriculture/article/ag-businesses-diagnostic-lab.** They may be reached at 615-837-5125.

Preharvest Prevention

The two primary ways to prevent birds from becoming infected with pathogens are: 1) prevent the bird from coming in contact with disease transmitting vectors; and 2) decrease the susceptibility of the bird to disease. Good Agricultural Practices (GAPs) and biosecurity are on-farm practices that focus on preventing bird contact with pathogen vectors. Strategies such as vaccination and antimicrobial treatments can decrease the susceptibility of the bird to disease.

Of all the strategies mentioned to keep birds healthy, biosecurity is the most important and potentially the easiest to implement. There are six important biosecurity measures, these are - Keep your distance, Keep it clean, Don't haul disease home, Don't borrow disease from your neighbor, Know the warning signs of infectious bird diseases and Report sick birds.

Keep your distance – This means limiting access to the birds from people and other animals, especially wild birds. This can be accomplished by restricting access to the birds by having them in a fenced in enclosure. This will create a clean area (where the birds are) and a dirty area (everywhere else).

Keep it clean - Having dedicated clothes and shoes as well as washing your hands and shoes before entering the bird area will help in preventing the introduction of pathogens. Equipment and cages that come into contact with the birds should have manure removed before they are disinfected. Keeping and maintaining clean feed and water is important to minimize pathogen growth. In addition any mortality should be immediately removed. Even if the birds died from natural causes they still can pass along potentially pathogenic organisms.

Don't haul disease home – If at a location with poultry any equipment or supplies should be thoroughly cleaned and sanitized. Any poultry acquired to add to the flock should be quarantined for at least 30 days, since they may be carrying disease.

Don't borrow disease from your neighbor - Equipment or supplies borrowed from a neighbor should be cleaned and disinfected.

Know the warning signs of infectious bird diseases – these include sudden mortality, problems breathing, lack of energy, green feces or diarrhea, sudden drop in egg production and misshapen eggs, swelling in the head, discoloration of the wattles and legs, and seizures.

Report sick birds – if there is a sudden spike in mortality (>50%). Call the State of Tennessee Veterinarian's Office at 615-837-5120 or the USDA at 1-866-536-7593.

More information regarding biosecurity can be located with USDA APHIS at **http://www.aphis.usda.gov/wps/portal/aphis/ourfocus/animalhealth/sa_animal_disease_information/sa_avian_health?1dmy&urile=wcm%3apath%3a%2FAPHIS_Content_Library%2FSA_Our_Focus%2FSA_Animal_Health%2FSA_Animal_Disease_Information%2FSA_Avian_Health%2FSA_Biosecurity_for_Birds**

Other methods that can help prevent disease in poultry include –vaccination, use of antibiotics, prebiotics, probiotics, organic acids and botanicals. Vaccination of young birds is a good method to prevent common viral diseases like Infectious Bronchitis, Infectious Bursal Disease and Mareks Disease; however their efficacy against bacterial diseases is mixed. Antibiotics may be used to treat or prevent poultry illness. They can be added to the water or to the feed. It is important to note that using antibiotics in the feed will require a veterinarian's prescription starting in 2016.[6] Prebiotics are typically added in the feed; however they can be added to the water as well. Prebiotics help feed the "good" bacteria in the bird promoting them to grow with the thought they will "push out" the "bad" bacteria. Probiotics, delivered in water or feed, will colonize the birds and make them less susceptible to disease. Examples of probiotics include *Lactobacillus*, *Bifidobacterium* and *Bacillus*. Probiotics may improve weight gain and immune system health but may also produce inconsistent results. Organic acids are typically added to the water and have been shown to exclude pathogens; however the flavor may be strong and birds may refuse to drink the water to which it has been added. Botanicals, also known as phytogenics, stimulate the growth of beneficial bacteria while inhibiting pathogenic bacteria. Research into farm-scale use of botanicals in poultry production is still in its early stages, and poultry scientists are still seeking identification of the specific properties of botanicals that are beneficial to birds. It must be emphasized that not all of the above strategies for controlling pathogens are, as of yet, consistent. The two exceptions are the vaccines and antibiotics, but even in these two cases the vaccine or the antibiotics might not have efficacy against the disease causing organism and if that is the case they will offer little to no protection.

Producers considering any preharvest strategy to improve biosecurity and prevent pathogen colonization should evaluate each strategy based on:

- Proof of strategy for prevention
- Economic cost of mitigation
- Customer and producer preference

Table 7 summarizes many of the benefits and challenges small-scale producers may experience in preharvest disease management strategies.

Table 7. Preharvest Disease Prevention: Pros and Cons

	Proven Benefits	Possible Challenges
Biosecurity	▪ Excluding disease vectors ▪ (wildlife, people, rodents, birds) ▪ prevents disease ▪ Minimizes chance of disease entering the flock ▪ Minimal costs	▪ Managing farm workers and guests ▪ Reducing pasture reared bird contact with disease vectors
Antibiotics	▪ Can effectively treat sick birds ▪ Relatively low cost	▪ Availability and use (label) restrictions ▪ Producers and consumers may prefer antibiotic-free production
Vaccines	▪ Can be administered at hatchery ▪ Proven disease prevention	▪ Cost and effectiveness
Probiotics	▪ Delivered in feed and water	▪ May produce inconsistent results
Prebiotics	▪ Delivered in feed	▪ Inclusion rates may need to be adjusted at farm-level ▪ Inconsistent results
Organic Acid	▪ Delivered in feed or water	▪ Birds may not like the flavor ▪ Inconsistent results
Botanicals	▪ Delivered in feed or water ▪ Consumer and producer appeal	▪ Flavor ▪ Inconsistent results

[6] FDA final rule on the Veterinary Feed Directive - https://www.federalregister.gov/articles/2015/06/03/2015-13393/veterinary-feed-directive

The following sidebar discusses whether certified organic poultry production has been shown to be safer than non-certified organic production systems.

Are Organic Poultry Production Systems Safer in Terms of Food Safety?

Sales of organic chicken in the US have increased. Producers and consumers often ask whether there are health benefits to certified organic systems as compared to non-certified production. Research published in 2014 from the UT Department of Food Science and Technology indicates that *Salmonella* occurrence in poultry could not be tied to differences in certified and non-certified. However, there was a lesser incidence of *Salmonella* on birds from farms with more good bird health and biosecurity practices. The researchers concluded that poultry food safety is more dependent on how well the farmerfarms maintains bird health, no matter the production system.

Source: "Impact of rearing conditions on the microbiological quality of raw retail poultry meat." Journal of Food Science, August 2013.

Disease Prevention at Processing

Food safety controls are important during poultry processing. USDA requirements for construction materials that can be properly cleaned and sanitized help guard against pathogens remaining in the processing facility. Proper discharge of wastewater and waste also prevent carcass contamination. Since water can carry pathogens, any water used in the slaughter process must be potable and, in the case of well water, tested for water quality according to USDA guidelines.

An on-farm poultry processor should develop a food safety protocol. A tool that can assist producers in this task is a Hazard Analysis and Critical Control Point (HACCP) plan. HACCP is a framework that determines where there is potential for food safety contamination – critical control points – in a food handling system. The HACCP plan describes those points, sets limits and specifies how to monitor those limits, and establishes corrective actions to be taken if necessary. The HACCP plan also describes how the controls are verified and what recordkeeping will be performed.

Although on-farm poultry processors operating under an exemption are not required to have a HACCP plan, a written food safety plan is strongly recommended. This plan may include the HACCP plan as well as the Standard Sanitation Operating Procedures (SSOPs) used in the facility. The SSOPs simply describe when equipment is sanitized and what sanitation compound is used in the process.

Finally, carcass treatments are demonstrated to be an effective means of reducing pathogens. Proper carcass treatment starts with the appropriate temperatures used in scalding and cooling the carcass. Scalding water should be 60° C (140° F) and chill water should be at 4° C (40° F). In processing plants with on-site USDA inspection, producers are required to get the carcass down to 4° C (40° F) in no more

than 4 hours. This temperature is taken in the internal muscle. Carcasses may also be treated chemically (trisodium phosphate, lactic acid) and with natural extracts (citrus, herb). If a producer chooses to treat a carcass, a treatment should be selected that has been demonstrated to reduce pathogens such that improved food safety and a return to money invested can be realized.

Postharvest

Food safety is not over once the bird is harvested, dressed, packed and cooled. Storage at proper temperatures – including during transport to market – will preserve bird quality and reduce food safety risk. Poultry should be kept chilled at 4° C (40° F) or frozen at -18° C (0° F). Frozen product must be maintained in a frozen state from the processing facility to the consumer.

Food Safety Risk Management Checklist

Bird Health and Biosecurity

- ☐ Procedures are in place to limit farm visitor contact with birds
- ☐ Controls are practiced for rodents, wildlife and other disease vectors
- ☐ Equipment is cleaned and sanitized before being used with the birds
- ☐ Any new additions to the flock are kept in quarantine for 30 days

Preharvest

- ☐ Feed and water receptacles are kept clean
- ☐ Antibiotics and/or vaccines if utilized are administered according to manufacturer's instructions (label)
- ☐ Bird health supplements (probiotics, prebiotics, direct fed antimicrobials and botanicals) are delivered according to manufacturer's instructions (label)
- ☐ Any withdrawal times before slaughter (for medications or other products) are followed

Harvest/Processing

- ☐ Potable water is used for processing
- ☐ Well water, if used, has been tested for coliforms
- ☐ Waste and wastewater is properly discharged and cannot contaminate carcasses
- ☐ Producers have developed a written food safety plan identifying possible food safety contamination points and Standard Sanitation Operating Procedures
- ☐ Scalding and cooling water are maintained at recommended temperatures
- ☐ Carcasses are cooled according to safe time and temperature guidelines
- ☐ Carcass treatments have been selected according to pathogen reduction

Postharvest

- ☐ Meat is stored at proper temperatures
- ☐ Safe handling instructions are included for consumers

Conclusion

Producers interested in on-farm poultry processing under one of the three USDA exemptions will need to evaluate potential risks before pursuing on-farm processing. The major risk areas include financial, legal/regulatory and food safety. Identifying risks, and potential barriers to processing poultry in light of those risks, will help guide the producer's decision process in determining the feasibility of on-farm poultry processing.

Financial risks from on-farm processing include product liability risk and the cost of processing and capital investment. Purchasing an appropriate level of product liability insurance is a proactive way to manage liability risk. Completing a careful estimate of on-farm processing costs will help the producer determine if on-farm processing is financially feasible. Planning should always include consideration of whether markets can be developed to sell the quantity of product at a price that allows all costs to be covered.

Two major regulatory concerns are fulfilling USDA standards for poultry processing and operating in compliance with Tennessee state regulations for wastewater disposal. Contacting the USDA-FSIS and TDEC offices are important first steps in navigating the regulations associated with on-farm poultry processing.

Poultry is routinely listed as one of the major sources of foodborne illnesses in the U.S. Farm production practices relating to bird health and biosecurity can impact the frequency of disease organisms. Reducing the incidence and likelihood of carcass contact with pathogens during poultry processing and handling is also important for reducing food safety risks.

Final decisions for whether to process poultry on the farm should be made while carefully weighing potential risks and rewards in all three areas – financial, legal/regulatory and food safety.

Glossary

Biosecurity: Farm management practices designed to prevent disease by minimizing the movement of disease organisms and disease vectors. Combatting movement of bacteria and viruses, as well as rodent and fly prevention, are common biosecurity measures.

Campylobacter: Campylobacter spp. is a bacteria that is common in poultry and a leading cause of poultry-related foodborne illness.

Code of Federal Regulations: The Code of Federal Regulations (CFR) is the country's legal regulatory framework. Poultry processing is regulated under certain sections of the CFR, like sanitation regulations in 9 CFR 416—Sanitation.

Exemption: An exemption makes an exception to a rule under certain circumstances, such as the USDA exemption for on-farm poultry processing.

Fixed Cost: A fixed cost does not vary with the quantity produced, such as the cost of land, capital equipment and facilities.

Interstate commerce: Interstate commerce involves products that cross state lines before sale.

Intrastate commerce: Intrastate commerce involves products sold in the same state where they were produced.

Poultry: Under USDA regulations, "poultry" refers to any domesticated bird, alive or dead.

Poultry Products Inspection Act: The Poultry Products Inspection Act (PPIA) regulates the slaughter and sale of poultry in the U.S.

Salmonella: Salmonella spp. is a bacteria frequently cited for food safety concerns. With Campylobacter, it is the most common source of foodborne illness from poultry.

Variable Cost: A cost that varies with changes in production, such as the cost of hired processing labor, packaging and labels.

2014 Tennessee legislation: Tennessee Code Annotated § 53-7-209 (a)(5): "The commissioner shall, by regulation and under conditions as to labeling, and sanitary standards, practices, and procedures that the commissioner may prescribe, exempt from specific provisions of this part: Poultry producers and growers acting in compliance with exemptions established in the federal Poultry Products Inspection Act, compiled in 21 U.S.C. § 451 et seq."

Acronyms:

GAP	Good Agricultural Practices
HACCP	Hazard Analysis and Critical Control Points
SSOP	Standard Sanitation Operating Procedures
TDA	Tennessee Department of Agriculture
TDEC	Tennessee Department of Environment and Conservation
USDA-FSIS	United States Department of Agriculture Food Safety and Inspection Service

Photo credit: Katharos Farm

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