

## 2022 Turkey Industry Annual Report - Current Health Issues Facing the US Turkey Industry

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In preparation for this annual report to the USAHA Committee on Poultry & Other Avian Species, the subcommittee chairman, Dr. Clark, surveyed turkey industry professionals and veterinarians representing (n = 18) the US turkey production regarding the health status of turkeys produced in August 2021 through August 2022. Surveys were collected by a third party, blinded, and provided to Clark for analysis. The turkey industry reports several disease challenges for this 12-month period varying by geographic regions within a state and across the United States. The 2022 survey tallied 175.8 million head (81%) of the 216.5 million USDA reported raised. This report lists, Table 1, the challenges by disease and issues. Of particular interest in 2022 are issues with **lack of efficacious drugs** (#1), **clostridial dermatitis** (#2), **colibacillosis** (#3) and **coccidiosis** (#9). The most notable changes since 2021 was the addition of **Highly Pathogenic Avian Influenza (HPAI)** and **Cholera** to the top-10 and **Blackhead** jumped seven positions. This year respiratory diseases made up five of the top-10 rankings, Table 1B. New to this year's survey was differentiating Avian Influenza into Highly Pathogenic (HPAI) and **Low Pathogenic (LPAI)** ranking.

Again, this year the lack of approved, efficacious drugs ranks highest on the challenges experienced by the turkey industry survey participants and is likely a contributor to all turkey health challenges and disease issues that follow it on the ranking list. A few examples of the impact of this challenge include there being only one approved commercial live vaccination for turkey coccidiosis, approved commercial turkey *Salmonella* vaccines only including group B serotypes and the lack of an approved, efficacious molecule to treat blackhead disease following the withdrawal of the last known effective molecule against the disease in 2015. In addition, some supply chain disruptions have continued to impact the availability of certain animal health products similarly to what was reported in 2021.

The turkey industry has been significantly impacted by HPAI in 2022, and this is reflected in the survey results with HPAI ranking as a top challenge of concern. As of September 26, at least 158 commercial turkey premises have tested HPAI-positive, resulting in the loss of at least 6.8 million turkeys as part of the ongoing outbreak. Based on 2021 production volumes the loss accounts for approximately 3.1% of annual production. Turkey cases have occurred in 13 states, with Minnesota (44.3%), South Dakota (23.4%), Iowa (5.7%) and Wisconsin (4.4%) having the most cases reported.

In comparison, 7.4 million turkeys were lost from 160 commercial turkey premises in 2015 during arguably one of the most significant animal health challenges in the United States. The industry continues to focus on implementing strict biosecurity practices and recall on lessons learned from the 2015 outbreak to reduce virus introduction to commercial turkey premises to minimize the impact of HPAI. HPAI cases trended down from April to June this year, however, cases have increased entering the fall season.



Although the industry's ability to prevent and respond to HPAI has greatly improved, additional research on eradication and control is needed, especially as the new viruses enter the ecosystem and mutate. The National Turkey Federation (NTF) is a major advocate for the National Animal Disease Preparedness and Response Program (NADPRP) created by the 2018 Farm Bill. The program has invested \$22.1 million to support disease prevention and preparedness projects. In 2021, USDA's Animal and Plant Health Inspection Service (APHIS) made \$7.6 million for 35 projects focused on (1) developing vaccination plans for FAD outbreaks, (2) supporting animal movement decisions in an FAD outbreak, or (3) delivering outreach and education on animal disease preparedness and response topics to targeted audiences. In 2022, APHIS announced it will make up to \$17 million available to (1) Develop, Enhance, and Exercise State and Tribal Animal Disease Outbreak Emergency Response Plans, (2) Support Livestock1 and Poultry Biosecurity, (3) Enhance Depopulation, Carcass Disposal, and Decontamination Capabilities, (4) Support Animal Movement Decisions in a Disease Outbreak, (5)Enhance Animal Disease Traceability for a Disease Outbreak, (6) Support Outreach & Education on Animal Disease Prevention, Preparedness, and Response Topics, (7) Develop and Deliver Training & Exercises for Animal Agriculture Sector Responders, and (8) Commodity-Specific Topics, including (a) projects to advance the development of sheep and goat vaccines, and (b) projects to prevent and prepare for foreign and emerging aquatic animal diseases.

Looking ahead to the upcoming 2023 Farm Bill, NTF is again working with a broad coalition to encourage Congress to build on this foreign zoonotic prevention program and further focus on preventing and limiting foreign disease before it reaches our domestic livestock and poultry. Specific areas the turkey industry would like to prioritize in the Farm Bill are on biosecurity, depopulation, disposal, repopulation, research opportunities.

Indemnity payments are made for animals taken or destroyed to control or eradicate diseases such as HPAI. NTF is appreciative of the indemnification program implemented by USDA and APHIS along with the strong congressional support of the turkey industry as the industry manages through the outbreak. While indemnity values traditionally represented only conventional commercial turkey production APHIS earlier this year created turkey production subcategories of premium value, including turkey breeders and organic turkeys using data from a limited survey. In September, APHIS published an advance notice of proposed rulemaking (ANPR) to solicit public comments on a new approach to indemnity valuation and a new indemnity framework. NTF plans to submit comment to inform rulemaking on a program that has been critical in the ongoing outbreak.

**Blackhead** jumped up to #14 from #21 the prior year, but the number of reported cases decreased by 21% (Table 2). NTF was successful in securing \$1 million in funding and support language in the Fiscal Year 2022 Appropriations process in support of Histomoniasis (Blackhead disease) research. The language encourages USDA's Agricultural Research Service (ARS) to undertake a robust research campaign to develop treatment and prevention methods for Blackhead. The language and funding were a critical first step in helping initiate federally supported research and move forward in finding viable options to reduce incidences of Blackhead. In addition, report language was included in the Fiscal Year 2023 to encourage ARS to coordinate development of a Histomonas research program with intent to develop new prevention and treatment options. ARS is working with the University of Arkansas Division of Agriculture to develop such a program.

Salmonella mitigation remains a top priority for the industry and continues to be reported high on the industry survey despite it not being a significant health concern for turkeys. NTF continues to facilitate industry meetings for members to discuss challenges and best practices for reducing Salmonella throughout the production and processing of turkeys. USDA's Food Safety Inspection Service (FSIS) is expected to announce new policy regarding Salmonella regulations in the fall of 2022. In a presentation at the 2022 International Association for Food Protection Annual Meeting, Deputy Under Secretary Sandra Eskin discussed FSIS's new Salmonella framework for poultry will focus on controlling Salmonella when receiving birds, at slaughter, and before products leave the establishment.



Reported cases of *Mycoplasma synoviae* (MS) and *M. gallisepticum* (MG) decreased. Cases of Turkey Reovirus Digital Flexor Tendon Rupture decreased for two consecutive years and its ranking said the same (#11). Added to the survey in 2021 *Streptococcus gallolyticus* (aka, *S. bovis*) increased one and THRV (Turkey Hepatitis Reovirus) dropped one ranking in 2022 to #16 and #19 respectively. Turkey Coronavirus (TCV) ranked #28, cases increased 292% due to an on-going outbreak in one geographic area. TCV is also known as Coronaviral Enteritis of Turkeys, Bluecomb, Mud Fever, or Transmissible Enteritis.

**Coccidiosis** continues to rank high most likely reflecting the industry's raised without antibiotics (RWA), antibiotic free (ABF) and no antibiotics ever (NAE) market. RWA and NAE programs do not permit the use of ionophore anticoccidials and some programs prohibit FDA approved chemical anticoccidials, so anticoccidial programs consist of alternative phytogenics or vaccination. An effective coccidiosis control program in turkeys involves the use of anticoccidial medications, and/or phytonutrients, and/or live vaccines and the subsequent development of immunity. Table 4 summarizes the US turkey production coccidia control programs. Coccidia vaccination is with one USDA conditionally approved commercial turkey coccidiosis live vaccine or some colleagues utilize autogenous coccidiosis vaccines. Nutritional dietary supplementation with phytonutrients is either via in-feed application or drinking water administration. Programs may utilize phytonutrients in addition to the current anticoccidial program, to potentiate the possible benefits, or as the sole supplement for coccidia control. Some phytonutrients have purported activity against coccidia. Phytonutrients consist of 'alternative' products including organic acids, yeast, phytonutrients from plant extracts (saponin, yucca, etc.) and essential oils (oregano, carvacrol, thymol, cinnamaldehyde, capsicum oleoresin, turmeric oleoresin). Essential oils may be natural extracts or synthetic nature-identical compounds.

In 2022, NTF created the NTF Research Committee, a committee made up of professionals in the academic and government sectors that conduct research specific to the turkey industry. Members of the committee receive updates from NTF on association efforts and priorities. In addition, members are invited to research discussions with industry members to discuss industry priorities and identify meaningful solutions to turkey-related issues, including many of the animal health challenges and diseases covered in this industry survey.

The industry was surveyed (only 17 of 18 reported) to classify their antibiotic programs (Table 3) defined by how anticoccidials and antimicrobials are allowed. Twenty-five percent (25%) of the industry turkeys were reared NAE/ABF category, same as 2021, as Conventional Use programs decreased to 37% from 38% (2021). **Conventional/Full Use** program permits the proper use of any FDA approved antibiotics, administered in the feed or drinking water, including ionophores, bacitracin, flavomycin, and /or those deemed medically important to humans by FDA. The third category titled "**No Growth Promotants**, **CRAU/CRAU-like**" (Certified Responsible Antibiotic Use), only permits the therapeutic uses under the prescription and supervision of a veterinarian. Thirty-seven percent (37%) of those turkeys reported were CRAU programs. **No Antibiotics Ever (NAE) /Antibiotic Free (ABF, RWA)**, does not permit either infeed or in-water antibiotics. FDA has stated that ionophore anticoccidials are antibiotics.

Robert M. Califf M.D. was named Commissioner of Food and Drugs in February 2022. Since, the agency's focus has remained similar to what it was industry under Acting Commissioner Janet Woodcock. FDA continues to move forward with many activities that will likely impact the turkey industry. A second concept paper on the process and criteria for ranking antimicrobial drugs based on their importance in human medicine (GFI #152 Appendix A) and an approach for defining durations of use for medically important antimicrobial drugs intended for use in or on feed are still expected to publish.

In 2021, turkey production decreased from 7,192,443 in 2020 to 6,960,919 pounds (live weight) and decreased to 216,500,000 head with an average live weight of 32.28 lbs.<sup>1</sup> Per capita consumption for turkey products decreased from 15.3 in 2021 to 15.8 in 2020.<sup>2</sup>

Sources:

Clark, SR and L. Frobel. Current Health and Industry Issues Facing the US Turkey Industry. Proceedings 126th Annual Meeting of the USAHA, Virtual; Committee on Poultry and Other Avian Species. Pending Publication. Presented Oct 3, 2022.

<sup>&</sup>lt;sup>1</sup> USDA Poultry Slaughter 2021 Annual Summary, Feb. 2022

<sup>2</sup> USDA, ERS, Livestock & Meat Domestic Data: <u>https://www.ers.usda.gov/data-products/livestock-and-meat-domestic-data/#Livestock%20and%20poultry%20slaughter</u>



**Table 1.** Turkey health survey (August 2021 - 2022) of professionals in US turkey production (n = 18, head reporting = 175.8 million) ranking current disease issues (1 = no issue to 5 = severe problem). Data on file.

Issue	Score Average (1-5)
Lack of approved efficacious drugs	4.8
Clostridial Dermatitis (Cellulitis)	4 3
Colibacillosis	3.9
Avian Influenza, High Path (HPAI)	3.8
Ornithobacterium rhinotracheale (ORT)	37
Bordetella avium	3.2
Salmonella	3.2
Cholera	2.9
Coccidiosis	2.9
Leg Problems	2.8
TR-DFTR (Turkey Reovirus Digital Flexor Tendon Rupture)	2.8
Late Mortality	2.7
Protozoal Enteritis (Flagellated)	2.7
Blackhead (Histomoniasis)	2.7
Cannibalism	2.6
Streptococcus gallolyticus (aka, S. bovis)	2.6
Tibial Dyschondroplasia (TDC, Osteochondrosis)	2.5
Poult Enteritis of unknown etiologies	2.4
THRV (Turkey Hepatitis Reovirus)	2.4
Round Worms (Ascaridia dissimilis)	2.3
Heat Stress/Mortality	2.1
Osteomyelitis (OM)	2.0
Breast Blisters and Breast Buttons	1.9
Bleeders (aortic, hepatic ruptures)	1.8
Necrotic enteritis	1.8
Shaky Leg Syndrome	1.8
PEMS (Poult Enteritis Mortality Syndrome)	1.8
Turkey Coronavirus (TCV, Bluecomb)	1.8
Mycoplasma synoviae (MS)	1.7
Avian Influenza, Low Path (LPAI)	1.7
Newcastle Disease Virus (NDV)	1.7
Mycoplasma gallisepticum (MG)	1.5
Fractures	1.3
H3N2 (H1N1) Swine Influenza	1.2
Erysipelas	1.2
Mycoplasma iowae (MI)	1.1
Mycoplasma meleagridis (MM)	1.1
Avian Metapneumovirus	1.1



Table 1A. Enteric Diseases Ranking for 2022.

Issue	Score Average (1-5)	Overall Rank (1-39)
Coccidiosis	2.9	9
Protozoal Enteritis (Flagellated)	2.7	13
Blackhead (Histomoniasis)	2.7	14
Poult Enteritis of unknown etiologies	2.4	18
Round Worms (Ascaridia dissimilis)	2.3	20
Necrotic enteritis	1.8	25
PEMS (Poult Enteritis Mortality Syndrome)	1.8	27
Turkey Coronavirus (TCV, Bluecomb)	1.8	28

**Table 1B**. Respiratory Diseases Ranking for 2022.

Issue	Score Average (1-5)	<b>Overall Rank (1-39)</b>
Colibacillosis	3.9	3
Avian Influenza, High Path (HPAI)	3.8	4
Ornithobacterium rhinotracheale (ORT)	3.7	5
Bordetella avium	3.2	6
Cholera	2.9	8
Mycoplasma synoviae (MS)	1.7	29
Avian Influenza, Low Path (LPAI)	1.7	30
Newcastle Disease Virus (NDV)	1.7	31
Mycoplasma gallisepticum (MG)	1.5	32
H3N2 (H1N1) Swine Influenza	1.2	34
Avian Metapneumovirus	1.1	38

**Table 2.** Turkey health survey (August 2021 - 2022) of professionals in US turkey production (n = 18, head reporting = 175.8 million) reporting cases of diseases. Data on file.

Cases (##) of	2022	2021	2020	2019	2018	2017	2016
Blackhead (Histomoniasis)	103	130	82	96	127	109	101
Mycoplasma synoviae (MS)	14	34	21	25	35	33	20
Turkey Coronavirus (TCV)	459	117	27	95	185	12	6
Turkey Reovirus Digital Flexor Tendon Rupture	170	239	548	486	234	182	31
Mycoplasma gallispecticum (MG)	8	78	31	30	50	52	29



**Table 3**. Turkey health survey (August 2021 -2022) of professionals in US turkey production (n = 17, head reporting = 146 million) by antibiotic program. Data on file.

	2022	2021
Conventional/Full Use <sup>1</sup>	37%	38%
No Growth Promotants, CRAU/CRAU-like <sup>2</sup>	37%	36%
NAE /ABF, RWA <sup>3</sup>	25%	25%

<sup>1</sup>Conventional/Full Use (any antibiotics, including ionophores, bacitracin, flavomycin, and /or those deemed medically important to humans by FDA), allows in-feed and in-water administration of antibiotics.

<sup>2</sup>No Growth Promotants, CRAU/CRAU-like (Certified Responsible Antibiotic Use), permits only therapeutic uses.

<sup>3</sup>No Antibiotics Ever (NAE) /Antibiotic Free (ABF), Raised Without Antibiotics (RWA), does not use neither in-feed nor in-water antibiotics. No hatchery injection of antibiotics.

**Table 4.** Turkey survey (August 2021 –2022) of professionals in US turkey production (n = 17, head reporting = 146 million) coccidia control programs. Does not total 100%. Alternatives (phytonutrients) and vaccines may be used to supplement the current ionophore or chemical anticoccidial program, or as the sole program for coccidia control. Data on file.

Program	2022	2021
Ionophore	58%	66%
Chemical	38%	33%
Alternative (Phytonutrients)	20%	54%
Vaccine	14%	15%