2024 Turkey Industry Annual Report - Current Health Issues Facing the US Turkey Industry

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[2]Clark, et.al. Turkey Industry Annual Report available since 2000 <www.usaha.org>
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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 = 21) the US turkey production regarding the health status of turkeys produced in August 2023 through August 2024. Surveys were collected by a third party, blinded, and provided to Clark for analysis. The turkey industry reported several disease challenges for this 12-month with only slight variations by respondents in the United States. The 2024 survey tallied 159.2 million head (73%) of the 218.0 million USDA reported raised. This report lists, Table 1, the challenges by disease and issues. The 2024 top three shifted for the first time in the survey's 24 year history as **Avian Metapneumovirus (aMPV)** (#1) jumped to the top of the list followed by the **lack of efficacious drugs** (#2), and **Highly Pathogenic Avian Influenza (HPAI)** (#3). **Colibacillosis** and **Clostridial Dermatitis (Cellulitis)** both shifted down (#4 and #5) due to the ranking of aMPV and HPAI. Reovirus continues as a notable issue in the 2024 survey, **TR-DFTR (Turkey Reovirus Digital Flexor Tendon Rupture)** and **THRV (Turkey Hepatitis Reovirus)**, ranked #6 and #9 respectively, from #4 and #7 the prior year. Reovirus infections may be associated with **"Leg Problems"** (#10) and **"Bleeders" (aortic, hepatic ruptures)**, moved from #18 from #12. In addition, ***Ornithobacterium rhinotracheale*** **(ORT)** (#7) and ***Bordetella avium*** (#11) and **Blackhead** (#14) all moved down two positions. This year respiratory diseases continued to make up four of the top 10 rankings, Table 1B.

Avian Metapneumovirus (aMPV) rose from years at the bottom of the ranking to #1 of the 2024 survey and reported 2,355 cases. It was #38 in 2023. aMPV is closely associated with secondary issues including, lack of drugs, colibacillosis, ORT and *Bordetella*. The introduction of Avian metapneumovirus (aMPV) into the United States was suspected in late 2023, with subtype A detected in California and subtype B in North Carolina. By January 2024, the rapid dissemination of aMPV was confirmed in both states, and within four months, it had spread to most poultry-producing regions nationwide (Figure).

As part of epidemiology investigations, USDA Wildlife Services tested 100 peridomestic species around aMPV positive farms and did not find a single positive (David Marks, personal communication, Sept 11, 2024). In addition, USDA ARS tested 265 hunter harvested migratory bird samples from NC, VA, SC, and WV, and all negative for aMPV A, B, and C (David Surez, personal communication, Oct 4, 2024).

One example shared by a large turkey company demonstrates the dramatic effects on flock mortality associated with aMPV. The first suspected case of aMPV clinical disease occurred in November 2023. Over the next three months, average weekly company-wide flock mortality increased by 113% above the prior 12-month company average, with one week peaking at a 208% increase. Following the winter introduction,

average weekly flock mortality has remained 65% higher than pre-outbreak levels.[1] Flock monitoring has revealed that 98% of all flocks are now infected with aMPV.

aMPV is affecting all categories of poultry, including turkeys, broiler chickens, egg layers, and breeder poultry. Among these, turkeys are the most significantly impacted. Turkey breeders are experiencing egg production declines ranging from 20% to 100%, lasting 2 to 4 weeks. This decrease in egg production is leading to a national shortage of poults. In commercial turkey flocks, mortality rates can be severe, approaching 100%, with clinical disease persisting for up to three weeks. Secondary infections, including *Escherichia coli*, cholera (*Pasteurella multocida*), ORT (*Ornithobacterium rhinotracheale*), and MG (*Mycoplasma gallisepticum*), complicate the clinical disease in all poultry species.

The poultry industry urgently requires both live and killed [inactivated] vaccines for Avian metapneumovirus (aMPV) subtypes A and B for both chickens and turkeys. As of September 28, 2024, there are no USDA-approved live vaccines for aMPV, and only three special approvals for inactivated (killed) vaccines. One (Hipra[2]) is an import permit for an inactivated vaccine and two vaccine manufacturers (Merck/Cambridge[3] and Ceva[4]) are domestically producing experimental autogenous vaccine, with US-origin subtype B isolates, to control outbreaks of aMPV in poultry farms in the US.

The ongoing spread of aMPV across major poultry-producing regions in the United States and Canada highlights the need for immediate and effective vaccination strategies. The disease continues to circulate among poultry in all the states, although cycling between low and high mortality rates, especially in turkey flocks. Regulatory bodies are encouraged to expedite the review and approval of suitable vaccines, in collaboration with industry's development, to mitigate the severe impacts on poultry health and production.

The **lack of approved, efficacious drugs** ranking was displaced by aMPV, dropping to #2, 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. In 2024, veterinarians prescribed antibiotics to manage secondary bacterial infections associated with the widespread aMPV outbreak. Examples of the impact of this challenge include: the approved commercial turkey *Salmonella* vaccines only including group B serotypes and the lack of an approved, no approved treatments for blackhead disease.

Reported cases of ***Mycoplasma synoviae*** **(MS)** and ***M. gallisepticum*** **(MG)** increased 161 and 43 respectively, from 20 and 12 prior year. Cases of Turkey **Reovirus Digital Flexor Tendon Rupture** ranked #6 in 2024 reported 368 cases (#4 and 487 prior year). **THRV (Turkey Hepatitis Reovirus)** ranked #9 (#7 prior year). Added to the survey in 2021, ***Streptococcus gallolyticus*** **(aka, *S. bovis*)** in 2024 ranked #23.

Turkey Arthritis Reovirus (TARV) also called, **Turkey Reovirus Digital Flexor Tendon Rupture (TR-DFTR)**, was recognized as a newly emerging disease in 2011. A unique reovirus has been isolated and identified as the cause of tenosynovitis and digital flexor tendon rupture in commercial turkeys. Clinical signs in young flocks are reportedly mild to nonexistent but can develop into lameness and/or abnormal gait in older flocks, starting at about 12 weeks of age. Affected flocks may also report an increased incidence of aortic ruptures and poor flock performance (weight gain, uniformity). Research continues into pathogenesis, virus characterization, diagnostics and epidemiology. Research indicates that the turkey arthritis reovirus is distinct from the recently identified novel reovirus causing arthritis in chickens, and most like the turkey

[1] Nov 29, 2023 – Feb 26, 2024, average weekly company-wide flock mortality was 1.28%, and the prior 12-month company (No 2022 – Nov 2023) average was 0.60%, and week of Jan 1, 2024, peaked at 1.85%. Following the winter introduction, average weekly flock mortality is 0.99% (March – September 2024) compared to before the disease introduction in 2023.
[2] USDA CVB has granted a Special Import Permit for the HIPRA vaccine against Avian Metapneumovirus: HIPRAVIAR® TRT on July 26th, 2024 (No. VB-283390). "… subtype B chicken origin strain, 1062, with proven cross-protection against subtype A, in injectable emulsion. In countries where the product is registered, it is indicated for use in both for chickens (breeders and layers) and turkeys." (Laboratorios Hipra S. A. memo, US - HIPRA introduction, 2024).
[3] Merck Animal Health launches experimental autogenous vaccine for avian metapneumovirus type B
[4] Ceva producing aMPV experimental autogenous vaccine using US-origin isolate - Modern Poultry

enteric reovirus. A 2019 NTF industry survey documented the severity of impact on the industry could be as high as $33.7 million with highly pathogenic strains of TARV.

THRV (Turkey Hepatitis Reovirus) is a disease issue added to this survey in 2020. THRV affected flocks ranged in age from 7 to 46 days with a median age of 15.5 days. Mortality peaks and subsides in a week and the cumulative mortality is 3-8%. Dr. M. Lighty (2019, personal communication) describes THRV as "… increased incidence of viral hepatitis in poults caused by reovirus. This appears to be an emerging disease caused by a previously recognized pathogen. Gross lesions range from subtle mottling to multifocal white/gray/tan foci in the livers; mild hepatomegaly has also been noted in some cases. Histopathology on these livers shows severe multifocal hepatocellular necrosis with infiltration by macrophages, lymphocytes, plasma cells, and/or heterophils. Necrotic hepatocytes may fuse to form multinucleated syncytial cells and there is often marked fibrin accumulation in necrotic areas…. Morbidity and mortality due to reoviral hepatitis can be highly variable. Risk factors for development of the disease and the economic significance of this disease on the turkey industry are not fully understood at this time." There are indications from the field that flocks developing hepatitis as poults can go on to develop turkey reoviral arthritis during grow out.

ORT (*Ornithobacterium rhinotracheale*) which remained relatively unchanged at #7 and scored 3.7 in 2024, compared to #5 (3.7) prior year, is a highly contagious respiratory disease in poultry caused by a gram-negative pleomorphic rod-shaped bacterium. It has been isolated from chickens, ducks, partridges, and guinea fowl. It was originally recognized in Europe and South Africa. ORT was first confirmed in the US from turkeys in 1993. Horizontal transmission (such as, bird-to-bird, contaminated people and equipment) by direct and in-direct contact is the primary route of spread. However, vertical transmission is suspected (Hafez, 2000). In the fall of 1995, it was a major cause of respiratory disease in midwestern states and since has become endemic across most of the USA. Management systems, such as brood-and-move have increased the exposure of ORT-naive birds to ORT in the finisher barns, resulting in respiratory disease and mortality in some operations. Biosecurity procedures must be taken. Proper water sanitation can minimize the severity and spread. Vaccination is limited and results are varied (toxoids, bacterins). Bacterins are used in breeders. No commercial vaccine is approved. Limited application of controlled exposure efforts on individual flocks have shown value. ORT in turkeys is an identified critical research need.

Bordetella avium continues as a significant respiratory disease challenge; bordetellosis ranked #11 (scored 2.5) from prior year at #9 (scored 2.8). Bordetellosis, otherwise known as Turkey Coryza, is a highly infectious, acute upper respiratory tract disease of turkeys characterized by high morbidity and usually low mortality. *Bordetella avium* (BA) is a small, Gram-negative, non-fermentative, motile, strictly aerobic bacillus. Other birds and older turkeys can be carriers but may not show clinical signs. Commercial vaccines are available. Water sanitation and biosecurity are emphasized to control *Bordetella*.

Turkey Coronavirus (TCV) ranked #31 from #25 (2023), as cases dropped to 31 from 411 cases in 2023 and 459 in 2022, as the TCV outbreak in one geographic area ended. TCV is also known as Coronaviral Enteritis of Turkeys, Bluecomb, Mud Fever, or Transmissible Enteritis.

Coccidiosis remained relatively unchanged, scoring 2.2 and its rank moved from #13 to #16. Concerns with coccidiosis control are 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, limiting anticoccidial programs to 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. New in 2024, USDA granted conditional approval to a three-strain commercial turkey coccidiosis live vaccine (Huvepharma) in addition to the previously licensed two strain product (Ceva). Nutritional dietary supplementation with phytonutrients is either via in-feed application or drinking water administration. Phytonutrients include 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.

The industry was surveyed (only 20 of 21 reported) to classify their antibiotic programs (Table 3) defined by how anticoccidials and antimicrobials are allowed; ranking allowed mostly unchanged. Nineteen percent (19%) of the industry turkeys in 2024 were reared NAE/ABF category, not significantly different from 18% prior year, similarly Conventional Use programs moved to 56% from 59% (2023). **Conventional/Full Use** program permits the proper use of any FDA approved antibiotics, administered in the feed or drinking water, including ionophores, bacitracin, bambermycins, 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. Twenty-five percent (25%) of those turkeys reported were CRAU programs. **No Antibiotics Ever (NAE) /Antibiotic Free (ABF, RWA)**, does not permit either in-feed or in-water antibiotics. FDA has stated that ionophore anticoccidials are antibiotics.

The introduction of **avian metapneumovirus (aMPV)** into the United States has been highly consequential to the US turkey industry. NTF has focused on communicating the impact of aMPV on the turkey industry to USDA to advance their understanding, being aMPV is a nonreportable disease. In addition, advocating for preventative measures remain a top priority, and NTF continues to engage with USDA Center for Veterinary Biologics (CVB) related to the industry's vaccine needs. Congress has weighed in on the importance of a modified live vaccine to address aMPV, with 11 Senators sending a letter to Secretary Vilsack requesting commercial modified live vaccine produced in Europe be imported to address the immediate need. Currently there are no USDA approved aMPV vaccines available in the US. NTF recently confirmed that USDA Center for Veterinary Biologics (CVB) is working to import multiple live vaccines to be used in in USDA facilities for laboratory and bird-safety testing.

As of September 2024, USDA CVB aMPV activity highlights include [bold emphasis added]:[5]

- February 6th **Notice 24-3** informing the biologics firms to submit permit applications and dossiers for risk analysis (superseded).
- June 11th **Notice 24-10** Veterinary Vaccines and Veterinary Diagnostic Products Targeting Avian Metapneumovirus (all subtypes).
- Product license and import permit applications limited to two specific types of vaccine products/developmental materials:
  - **Experimental Autogenous Products**: domestically produced, inactivated veterinary biological products from an isolate of the current outbreak strains, but with expanded distribution beyond the allowances for traditional autogenous products; and
  - **Imported developmental materials**: Master Seed Virus (and perhaps Master Cell Stocks) to facilitate domestic licensure and production of modified live viral or inactivated products.
- CVB has issued **import permits** for diagnostic kits, expanded to include inactivated vaccines.
- **Multi-fraction products** may be considered for response efforts.
- **CVB Question and Answer listening sessions** with Q&A on the APHIS website.

In year three of the current **Highly Pathogenic Avian Influenza (HPAI)** outbreak in commercial poultry, NTF remains actively engaged in the response to the virus. Since the start of the outbreak more than 100 million birds have been lost, over 14.5 million of which have been commercial turkeys. As of October 1, there have been 32 commercial turkey cases in 2024 resulting in a loss of more than 1 million birds. HPAI continues to be a key focus of the full NTF team. Over the last year, there have been several key events, including the first detections of H5N1 in livestock species and confirmations of H5N1 in humans. Improved and continued stringent biosecurity, along with rapid response for quick depopulation and disposal, has likely resulted in the impact of the overall outbreak being minimized compared to

While HPAI has been detected in multiple mammalian species in the US throughout the outbreak, the confirmation of H5N1 in livestock was a significant development. Since late March, there have been 255

[5] Srinivas, Geetha B. HPAI and Avian Metapneumovirus. USDA CVB presentation to AHI on September 18-19, 2024.

positive confirmed cases of H5N1 in dairy cattle throughout the United States. NTF continues to work with the US Department of Agriculture (USDA), Food and Drug Administration (FDA), Centers for Disease Control and Prevention (CDC) and state animal health officials as the situation evolves. In addition, NTF has worked closely with continue routine communications with national dairy trade associations, to share lessons learned from the turkey industry perspective and identify opportunities for collaboration to address as the situation evolves. In addition, NTF signed a letter to USDA Secretary Vilsack requesting USDA advance vaccine efforts to protect dairy cattle from H5N1 and reduce the overall environmental viral load. In August, Secretary Vilsack announced CVB is now accepting licensure applications for products used to vaccinate livestock for H5N1 and the authorization of field trial under specific conditions.

Throughout 2024, H5N1 has been confirmed in 16 humans in the US (5 following exposure to dairy cows, 10 following exposures to poultry, and 1 with no immediate known exposure). The symptoms of these individuals were mild, and the CDC continues to indicate the risk of the virus being spread from person to person was low. NTF continues to engage with CDC on the situation and further stress the importance of addressing the situation with a one health approach.

NTF along with the National Chicken Council (NCC), United Egg Producers (UEP), USA Poultry & Egg Export Council (USAPEEC) and the US Poultry & Egg Association (USPOULTRY) sent a letter to USDA Secretary Vilsack urging the agency to establish a HPAI Strategic Initiative that engages the brightest minds within industry, universities and government to expand our knowledge and develop novel methods to prevent, detect and respond to avian influenza. Lawmakers in the House and Senate have also emphasized the need for USDA to establish this initiative with specific additional research needed on advanced biosecurity measures and wild bird deterrents, vaccination and efficient depopulation methods and bird disposal processes listed within the letters.

Industry lacks commercial diagnostic and vaccine options for **Turkey Reovirus**. The NTF Foundation publicly announced a Reovirus Project in July that has the purpose to provide a reward for the development and successful marketing of diagnostic tool and/or vaccine that aids in reducing the impact of reovirus on the turkey industry. The project details can be found on NTF's website eatturkey.org.

The USDA Food Safety Inspection Service (FSIS) announced on July 29th, that raw chicken carcasses, chicken parts, comminuted chicken and comminuted turkey products with certain ***Salmonella*** levels and serotypes are adulterated within the meaning of the Poultry Products Inspection Act (PPIA). Specifically, FSIS has tentatively determined that raw chicken carcasses, chicken parts, comminuted chicken and comminuted turkey are adulterated if they contain any type of *Salmonella* at or above 10 colony forming units/per milliliter or gram (10 cfu/mL(g)) in analytical portion (i.e., mL of rinsate or gram of product) and contain any detectable level of at least one of the *Salmonella* serotypes of public health significance identified for that commodity (for turkey: Hadar, Typhimurium or Muenchen; for chicken: Enteritidis, Typhimurium, and I 4,[5],12:i:-).

If finalized, when FSIS tests a product sample for adulterants, establishments must maintain control of products tested for adulterants to ensure that the products do not enter commerce while waiting for receipt of the test results. If test results detect *Salmonella* at a level of 10 cfu/mL(g) or higher and serotypes Hadar, Typhimurium or Muenchen, comminuted turkey would be deemed adulterated, and any ground turkey product lot represented by the sample would not be permitted to enter commerce if the final product standard is not met.

FSIS is also proposing to revise the regulations that require that all poultry slaughter establishments develop, implement and maintain written procedures to prevent contamination by enteric pathogens throughout the entire slaughter and dressing operation to clarify that these procedures must include a microbial monitoring program (MMP) that incorporates statistical process control (SPC) monitoring methods, to require sampling at rehang instead of pre-chill, and to require that all establishments conduct paired sampling at rehang and post-chill.

NTF has worked to review the proposed rule and is engaging with the Technical and Regulatory Committee to gather feedback ahead of the upcoming public comment period ending. The industry has few commercial *Salmonella* vaccines available currently. Additional vaccines that provide protection for other serogroups remain a priority.

This September, FDA's Center for Veterinary Medicine (CVM) announced the establishment of four Animal and Veterinary Innovation Centers (AVICs), which are the recipients of funding for work to advance regulatory science and further development of innovative products and approaches to better support animal health and veterinary interventions. NTF supported the University of Arkansas application that was awarded funding for work related to **Blackhead**. Their work focus is to determine the infectivity and formation of cyst-like *Histomonas meleagridis* (the causative agent of blackhead disease in turkeys) *in vitro* and *in vivo*, identify the cellular pathways mediating encystation in *H. meleagridis*, and screen and assess potent inhibitors against encystation of *H. meleagridis in vitro* and *in vivo.* The partnerships were chosen through a competitive cooperative agreement process to establish the AVICs and address critical animal, human or environmental health needs in one or more priority areas. Funding is renewable up to four years pending suitable progress and availability of funds.

In 2023, turkey production increased from 6,524,214 in 2022 to 6,845,984 1,000-pounds (live weight)[6] and increased to 218,000,000 turkeys raised (210,000,000 prior year)[7] with an average live weight of 31.70 pounds (31.33 prior year)[8]. Per capita consumption for turkey products increased to 15.3 pounds in 2023 from 14.6 pounds in 2022[9].

[6] Poultry Slaughter 2023 Summary (February 2024). USDA, National Agricultural Statistics Service. Pg 5. https://downloads.usda.library.cornell.edu/usda-esmis/files/pg15bd88s/q524m975v/zs25zx570/pslaan24.pdf
[7] Poultry - Production and Value 2022 Summary (April 2023). USDA, National Agricultural Statistics Service. Pg 8-9. https://downloads.usda.library.cornell.edu/usda-esmis/files/m039k491c/b2775j31b/9k4213149/plva0424.pdf
[8] Poultry Slaughter 2023 Summary (February 2024). USDA, National Agricultural Statistics Service. Pg 5.
[9] USDA, ERS, Livestock & Meat Domestic Data, Turkey Sector: Background & Statistics: https://www.ers.usda.gov/newsroom/trending-topics/turkey-sector-background-statistics/#:~:text=US%20turkey%20disappearance%20per%20capita%3A&text=2019%3A%2015.9%20pounds,WASDE%20at%20a%20Glance%20visualization

Table 1. Turkey health survey (August 2023 - 2024) of professionals in US turkey production (n = 21, head reporting = >159.2 million) ranking current disease issues (1= no issue to 5 = severe problem). Data on file.

Issue	Score Average (1-5)
Avian Metapneumovirus (aMPV)	4.9
Lack of approved, efficacious drugs	4.8
Avian Influenza, High Path (HPAI)	4.2
Colibacillosis	4.0
Clostridial Dermatitis (Cellulitis)	3.9
TR-DFTR (Turkey Reovirus Digital Flexor Tendon Rupture)	3.7
Ornithobacterium rhinotracheale (ORT)	3.4
Salmonella	3.3
THRV (Turkey Hepatitis Reovirus)	3.3
Leg Problems	2.8
Bordetella avium	2.5
Late Mortality	2.5
Blackhead (Histomoniasis)	2.4
Cholera	2.4
Heat Stress/Mortality	2.3
Coccidiosis	2.2
Tibial Dyschondroplasia (TDC, Osteochondrosis)	2.2
Bleeders (aortic, hepatic ruptures)	2.1
Mycoplasma synoviae (MS)	2.1
Cannibalism	2.0
Poult Enteritis of unknown etiologies	2.0
Protozoal Enteritis (Flagellated)	2.0
Streptococcus gallolyticus (aka, *S. bovis*)	2.0
Breast Blisters and Breast Buttons	2.0
Avian Influenza, Low Path (LPAI)	1.8
Osteomyelitis (OM)	1.8
Round Worms (*Ascaridia dissimilis*)	1.8
Newcastle Disease Virus (NDV)	1.8
H3N2 (H1N1) Swine Influenza	1.7
Necrotic enteritis	1.7
Turkey Coronavirus	1.6
Mycoplasma gallisepticum (MG)	1.6
PEMS (Poult Enteritis Mortality Syndrome)	1.5
Shaky Leg Syndrome	1.4
Fractures	1.4
Erysipelas	1.1
Mycoplasma meleagridis (MM)	1.0
Mycoplasma iowae (MI)	1.0
Spondylolisthesis (Kinky-Back)	1.0

Table 1A. Turkey health survey (August 2023 - 2024) of professionals in US turkey production (n = 21, head reporting = >159.2 million): Enteric Diseases Ranking for 2024.

Issue	Score Average (1-5)	Overall Rank (1-39)
Blackhead (Histomoniasis)	2.4	13
Coccidiosis	2.2	16
Poult Enteritis of unknown etiologies	2.0	21
Protozoal Enteritis (Flagellated)	2.0	22
Round Worms (*Ascaridia dissimilis*)	1.8	27
Necrotic enteritis	1.7	30
Turkey Coronavirus	1.6	31
PEMS (Poult Enteritis Mortality Syndrome)	1.5	33

Table 1B. Turkey health survey (August 2023 - 2024) of professionals in US turkey production (n = 21, head reporting = >159.2 million): Respiratory Diseases Ranking for 2024.

Issue	Score Average (1-5)	Overall Rank (1-39)
Avian Metapneumovirus (aMPV)	4.9	1
Avian Influenza, High Path (HPAI)	4.2	3
Colibacillosis	4.0	4
Ornithobacterium rhinotracheale (ORT)	3.4	7
Bordetella avium	2.5	11
Cholera	2.4	14
Mycoplasma synoviae (MS)	2.1	19
Avian Influenza, Low Path (LPAI)	1.8	25
Newcastle Disease Virus (NDV)	1.8	28
H3N2 (H1N1) Swine Influenza	1.7	29
Mycoplasma gallisepticum (MG)	1.6	32

Table 2. Turkey health survey (August 2023 - 2024) of professionals in US turkey production (n = 20, head reporting = 159.2 million): reporting cases of diseases. Data on file.

Cases (##) of	2024	2023	2022	2021	2020	2019	2018
Blackhead (Histomoniasis)	51	61	103	130	82	96	127
Mycoplasma synoviae (MS)	161	20	14	34	21	25	35
Turkey Coronavirus (TCV)	31	411	459	117	27	95	185
Turkey Reovirus Digital Flexor Tendon Rupture	368	487	170	239	548	486	234
Mycoplasma gallispecticum (MG)	43	12	8	78	31	30	50
Avian Metapneumovirus (aMPV)	2355	-	-	-	-	-	-

Table 3. Turkey health survey (August 2023 - 2024) of professionals in US turkey production (n = 20, head reporting = 159.2 million) by antibiotic program. Data on file.

	2024	2023
Conventional/Full Use[1]	56%	59%
No Growth Promotants, CRAU/CRAU-like[2]	25%	23%
NAE /ABF, RWA[3]	19%	18%

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

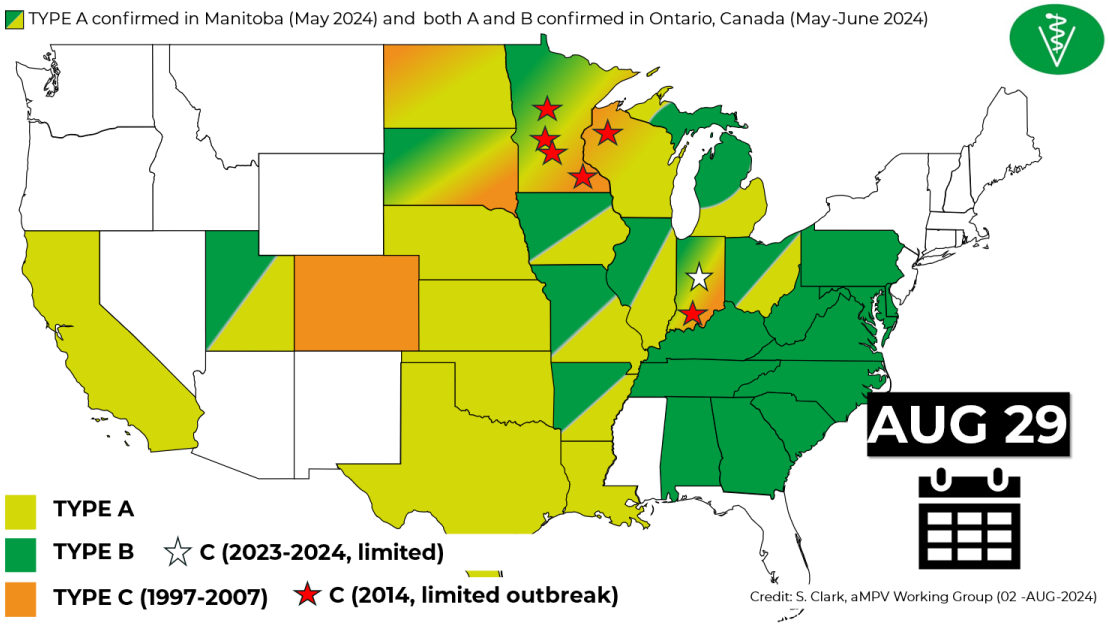
[2]No Growth Promotants, CRAU/CRAU-like (Certified Responsible Antibiotic Use), permits only therapeutic uses.

[3]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 2023 - 2024) of professionals in US turkey production (n = 20, head reporting = 159.2 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	2024	2023
Ionophore	56%	59%
Chemical	41%	36%
Alternative (Phytonutrients)	11%	18%
Vaccine	26%	14%

Figure: Map of aMPV cases in poultry. (Clark, aMPV Working Group)



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