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GLOBAL PROTECTION SERVICE

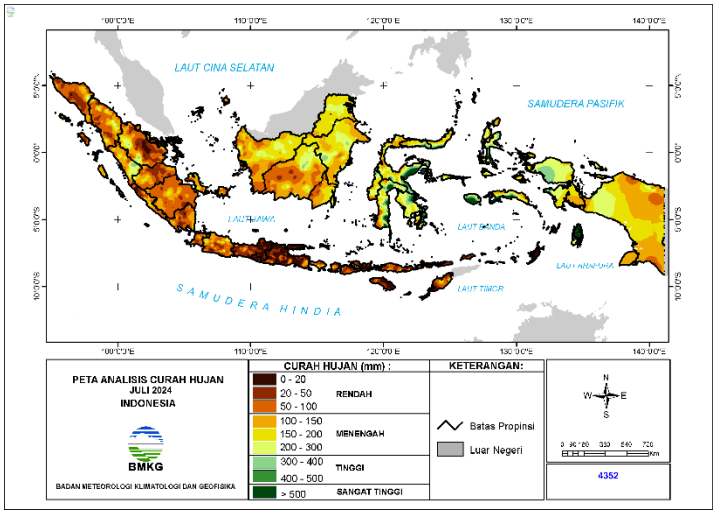
DISEASE SURVEILLANCE REPORT
Ceva Animal Health Indonesia

Eight Most Reported Poultry Diseases in July 2024

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Monitoring diseases program have been carried out in the centres of poultry farming areas in two major islands in Indonesia, Sumatra and Java. Data collection was carried out by a team of veterinarians from Ceva Animal Health Indonesia in their responsibility areas. The diagnose was based on clinical symptoms and post-mortem analysis of the affected flocks. Laboratory tests for confirmation were carried out whenever necessary and possible.

The Indonesian BMKG data analysis for July 2024 showed, the average relative humidity (RH) in the atmosphere generally ranges between 55 - 75%. The average surface temperature range between 22 - 29°C. Rainfall analysis for the month were varies, from low criteria (68%), medium (31%), and high – very high criterias (1%). 51% of Indonesia's territoriy were entered to dry season. Detail of this weather report can be access in https://www.bmkg.go.id.



In order to 'bring out' the best genetic capabilities of a breed, a farmer needs to

provide a comfortable environment and fresh air exchange in the farmhouse. This goal becomes a tough challenge amidst extreme seasonal changes. Failure of rearing management to anticipate the weather changes can cause the emergence of various diseases in poultry houses. In July 2024, there were total of 68 cases reported from 21 different diseases or condition – broilers reported 35 cases while layers reported 33 cases. Eight most prominent diseases will be explained further based on the area of occurrence. From the highest, those eight diseases are Chronic Respiratory Disease, Infectious Bronchitis and Complicated Chronic Respiratory Disease each with 8 reports or 12% of the total reports, followed by Newcastle Disease with 7 cases (10%), Infectious Bursal Disease with 5 cases (7%), Avian Metapneumovirus, Infectious Coryza, and Avian Influenza H9 each with 4 cases (6%). Other diseases were Inclusion Body Hepatitis, Avian Influenza H5, DOC Quality, Mycotoxicosis, Helminthiasis, Neonatal coli, and Heatstress each with 2 cases (3%). And the rest of the reports are Coccidiosis, Runting and Stunting Syndrome, Necrotic enteritis, Salmonellosis, Egg Drop Syndrome, and Infectious Laryngotracheitis each with 1 case (1%) consecutively.

CRD

As the extreme changing season still dominates most of Indonesia's equatorial region, the emergence of respiratory disease also dominates disease reports in poultry. Chronic Respiratory Disease is closely related to the failure of ventilation management to prevent the negative effects of extreme weather. In July 2024 there were 8 cases of Chronic Respiratory Diseases or 12% of total reports – 4 reports each from broilers and layers. Areas of infection can be seen in Figure and Table 1.

Areas	Species	No of Cases
Tulang Bawang, Lampung	Broiler	1
Tangerang, Banten	Broiler	1
Tangerang, Banten	Layer	2
Ciamis, West Java	Broiler	1
Subang, West Java	Broiler	1
Boyolali, Central Java	Layer	1
Mojokerto, East Java	Layer	1

Many mycoplasma species can infect birds, but only Mycoplasma gallisepticum (MG), M. synoviae (MS), M. meleagridis (MM) and M. iowae (MI) are considered pathogenic in chickens and turkeys, and can cause economic losses due to stunted growth, condemnations associated with lesions, or synovitis, airsacculitis, decreased egg production, and decreased hatchability. Worldwide, the incidence of mycoplasma infection is favored by the intensification of poultry production.

Chronic Respiratory Disease (CRD) caused by Mycoplasma gallisepticum. The infection often complicated with viruses (Newcastle disease, coronavirus, metapneumovirus, etc.) or bacteria (Escherichia coli, Haemophilus spp., Pasteurella spp., Ornithobacterium rhinotracheale, other Mycoplasma sp, etc.) or with fungi (Aspergillus, etc.). Pathogenecity of the disease can be exacerbated by poor environmental conditions (high ammonia, dust, moisture, faulty ventilation, etc.), stress factors (social stress, handling, vaccination, selection, beak trimming, etc.). On farms, the most frequent mode of infection for MG or MS is the respiratory route.

Transmission occurs primarily by direct contact between sick or latent carriers and susceptible birds. Indirect transmission through human activity, wild birds or insects or lives tock equipment is also possible. In addition, MG and MS can be transmitted vertically through the egg, either by contamination of the embryo by blood route, or because of contiguity between the oviduct and the infected air sacs. The percentage of infected eggs remains limited but probably allows the spread of infection in the hatchery and then the farms. The rate of vertical transmission would be greater in the first weeks of infection.



IB

Infectious Bronchitis continues to be one of the biggest threat for Indonesian poultry business. Case reports continuously increased in every area of surveillance. In July 2024, the avian coronavirus, again, marked its place as the second highest infection reported with 8 cases, which equal to 12% of the total July reports. 6 reports from broilers and 2 reports from layers. The areas affected by IB is shown in Table and Figure 2.

Areas	Species	No of Cases
Pantai Cermin, North Sumatera	Layer	1
Banyuasin, South Sumatera	Layer	1
Ciamis, West Java	Broiler	2
Subang, West Java	Broiler	2
Jombang, East Java	Broiler	1
Malang, East Java	Broiler	1

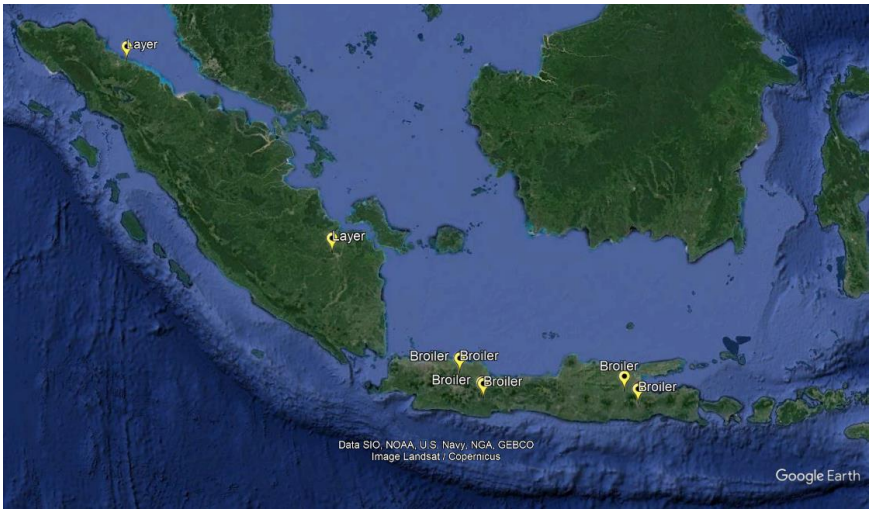
The ferocity of IB infections cause very severe performance disorders, both achievement of BW and FCR, high mortality (nephropatogenic strains), decreased of egg production, and high-cost of medications due to respiratory problems. IB infection have a tendency to complicate with respiratory viruses (ND, AI, ILT, etc.) and / or pathogenic bacteria (E. coli, Mycoplasma sp, Ornithobacterium sp). Because of its negative effect, in year 2017, Infectious Bronchitis have been stated as the biggest cause of economical losses in the poultry farming industry by Avian Health International.

IB is another disease that highly related to increasing humidity. With the average relative humidity (RH) that ranged very wide in the atmosphere, it is favor for avian coronavirus to cause problems in poultry. The presence of respiratory diseases in poultry farms could be caused by ineffective ventilation. Reduced ventilation usually results in an air pollutants, such as ammonia, carbon dioxide, dust and air-borne microorganisms.

The disease defined as a rapidly transmissible disease caused by avian coronaviruses, affecting the respiratory, urogenital, and intestinal tracts of hybrid layer, meat type, and fancy chickens of all age groups. Lateral spread of IBV may also affect quails, ring-necked pheasants, domestic turkeys and other

gallinaceous birds. The airborne spread of IBV is the most common and most significant mode of transmission in areas with a dense chicken population. Long distance, even intercontinental, spread of IBV is possible by trade in infected chicks, pullets, and adult chickens and also by contaminated eggs and multiple-use packing material.

Since infectious bronchitis virus have an ability to infect from DOC, it is highly recommended to provide protection through vaccination in the hatchery by combining a classical and a variant live IB vaccine that would provide a lifelong protection for broilers. As for layers, it is require to boosts both live and killed IB vaccines in pullets to laying period.



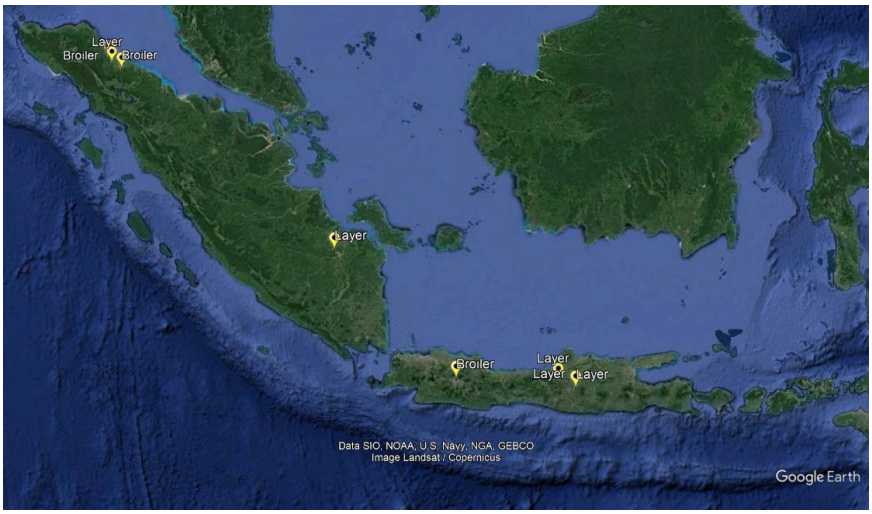
CCRD

Complicated Chronic Respiratory Disease is a complicated condition mostly related to failure of rearing management in overcome the negative effects of the extreme weather. With the weather as previously described by BMKG, it is very likely to CCRD becoming the second reported cases in July 2024. Its came with a total of 8 reports or equal to 12% of total reports - 5 reports were from broilers and 3 from layers. CCRD reported areas can be seen in Figure and Table 3.

Areas	Species	No of Cases
Mancang, North Sumatera	Layer	1
Langkat, North Sumatera	Broiler	1
Talun Kenas, North Sumatera	Broiler	1
Air Batu, South Sumatera	Layer	1
Bandung, West Java	Broiler	1
Salatiga, Central Java	Layer	1
Karangnyar, Central Java	Layer	2

The term "complicated" in Complicated Chronic Respiratory Disease means that this disease caused by multiple factors, which includes non infectious factors like extreme weather, high humidity, poor water sanitation and poor ventilation management, or infectious factors such as virus (IB, ND, AI, ILT), bacterial (E. Coli, Mycoplasma sp) with E. Coli isolation as the most dominant bacteria. Primary agents (e.g., field a nd vaccine strains of infectious bronchitis virus and Newcastle disease virus, mycoplasmas, avian metapneumovirus in turkeys, dust, ammonia, etc.) injure the respiratory mucosa, allowing E. coli to enter the blood stream. There is airsacculitis of varying severity, and the lesion is usually of long duration.

This expression of the disease used to be called chronic respiratory disease or CRD when Mycoplasma gallisepticum was the initial insulting agent. Infected air sacs are thickened, opaque, and may contain caseous exudate. Other respiratory lesions include pneumonia (more frequent in turkeys), pleuritis (more frequent in chickens), and pleuropneumonia. In addition to airsacculitis and lung lesions, affected birds usually have peritonitis and other lesions consistent with bacterial septicemia. The success keys to solve CCRD problem is, determine the initial cause of the complex, if its related to management factors, do the improvement, when it is related to viral infection such as IB or ND, improve the protection against the virus by vaccination and biosecurity efforts.



ND

The Newcastle Disease ranked fourth in July 2024. The number of reports of ND continues to decrease every month, nevertheless, ND is still a very dangerous disease for poultry. ND wave that have been struck in South East Asia since 2010 continues to threat with 7 reports or equal to 10% of total reports, 4 reports from broilers and 3 reports from layers. Most of reported cases of ND were came from farms that using conventional ND vaccination. Areas with ND reports can be seen in Table and Figure 4.

Areas	Species	No of Cases
Air Batu, South Sumatera	Layer	1
Bogor, West Java	Layer	1
Subang, West Java	Broiler	1
Tangerang, Banten	Layer	1
Batang, Central Java	Broiler	2
Karanganyar, Central Java	Broiler	1

Ever since its first report in 1926, Newcastle Disease continuously threatening poultry, from backyard chicken to industrial poultry business. The high number of case reports every month shows that conventional ND prevention programs which based on a combination of live and killed ND vaccination have its limitations in protecting chickens from the ferocity of ND infections. The major problems in ND conventional prevention programs are the interference of MAB ND to the efficacy of ND vaccination, quality of on farm vaccination, and the prolonged postvaccinal reaction. The solution to stop ND infections in broilers, layers and breeders is to use the Vectormune ND vaccine which has been proven to provide maximum protection, reduce virus shedding and has no side effects.

From 2018 to 2020, Ceva Disease Surveillance Database always showed that ND is the number one enemy of the Indonesian poultry business. However, the situation changed after Vectormune ND was introduced in Indonesian market. In year 2021, the Database has shown a 52% decrease in ND reports compared to the year 2020. The reason behind this improvement is that farms that previously infected by ND have agreed to use Vectormune ND as their basic vaccination programme. These farms were fully protected by Vectormune ND and eventually stopped reporting repeated ND cases. Vectormune ND was able to

prevent ND virus shedding from one period to the next, which ultimately succeeded in increasing protection against field ND virus challenges.

Newcastle Disease still a deadly and rapidly transmitted infection affect both meat and laying type chicken, causing enormous economical losses either due to high mortality that can reach 100% in young birds or losses of production performance like dropped egg production, poor FCR and bodyweight, until poor carcass quality. The solution to stop ND infections in broilers, layers and breeders is to use the Vectormune ND vaccine. The best ND protection started from the hatchery.



IBD

The next pathogen in the list of threats as of July 2024 is Infectious Bursal Disease so called Gumboro disease. There were 5 reports or 7%, 4 reports from broilers and 1 from layer. Areas with IBD reports can be seen in Table and Figure 5.

Areas	Species	No of Cases
Ciamis, West Jaba	Broiler	1
Bogor, West Java	Broiler	1
Cianjur, West Java	Broiler	1
Kendal, Central Java	Layer	1
Malang, East Java	Broiler	1

According to Ceva Indonesia GPS Disease Surveillance database analysis, Infectious bursal disease (IBD, Gumboro) infection mostly reported in the rainy and fluctuated season. Various factors related to this season, such as prolonged cold, high humidity, poor environment quality, as well as the fungal contamination of feed raw materials, the presence of vector animals carrying the IBD virus from one period to another, will increase the risk of IBD infection in the field. The increase virus loads can only be suppressed by implementing a strict, assertive and sustainable biosecurity program. If the biosecurity program is underestimated and fails, a large number of vvIBD virus will precede the work of the attenuated live vaccine virus. Likewise, immunosuppressive diseases such as mycotoxicosis, CIAV, Coccidiosis in early age may damage the immune system thus lead to IBD vaccination failure.

Another important issue in the protection of IBD is the heterogeneity of IBD maternal antibody in day-old chicks. The wide variety of IBD MAB makes it difficult to determine the day of vaccination and some birds may be unvaccinated at the right time. The key to prevent repeated IBD infection is the ability of IBD vaccine to completely occupate Bursa of Fabricius that will prevent the next infection by any IBD virus, able to adapt the decreasing MAB of IBD at any level, thus, able to Stop Gumboro Cycle. Transmune have been proven its consistency to protect broilers and Novamune have been develop distinctively for layer

to protect Bursa against the field IBD virus of any kind. Both vaccines were vaccinated in the hatchery in under the close supervision of the Ceva Vaccination Service and Equipment team.



aMPV

Over the past 20 years, avian metapneumoviruses (aMPV) have been identified as causing infections of the upper respiratory and reproductive tracts in several species of domestic poultry (turkeys, chickens, guinea fowl and ducks). Whatever the clinical form and age of affected birds, pneumovirosis is causing significant economic losses. Respiratory clinical forms were first recognized. Avian metapneumoviruses are especially common in young chickens and turkeys. Respiratory clinical signs are found in turkeys [known as avian (ART) or turkey rhinotracheitis (TRT)] and chickens ["swollen head syndrome" (SHS)]. The viral respiratory infection does not last long. In chickens and turkeys, it is frequently followed by secondary bacterial infections that complicate the diagnosis and that may result in elevated mortality rates. These bacterial infections, in particular Escherichia coli, are an essential etiological component of SHS. In turkey, chicken and duck breeders, the respiratory phase of the aMPV infection can be subtle and the drop in egg production that follows may be the only observed clinical sign.

Areas	Species	No of Cases
Tangerang, Banten	Layer	1
Kediri, East Java	Layer	2
Blitar, East Java	Layer	1

In July 2024, aMPV cases emerged with 4 reports (6%), all reports came from layers. aMPV reported areas can be seen in Figure and Table 6. Factors contributing to or aggravating avian metapneumovirosis are age (young birds are more susceptible to respiratory forms), rearing conditions (poor ventilation, excess ammonia and dust in the atmosphere, an insufficient heating are all aggravating factors) and intercurrent diseases with respiratory tropism [Escherichia coli, Avibacterium paragallinarum (Haemophilus paragallinarum), Ornithobacterium rhinotracheale, Bordetella avium, Riemerella anatipestifer, Mycoplasma gallisepticum, etc.] or genital tropism (Mycoplasma spp. Escherichia coli, infectious bronchitis virus, paramyxovirus types 1 or 3, egg drop syndrome 76, etc.) or that are immunosuppressive (hemorrhagic enteritis in turkeys, infectious bursal disease in chickens, etc.).

Isolated for the first time in 1986, aMPV belongs to the genus Metapneumovirus in the Pneumovirinae subfamily, Paramyxoviridae family. The viral particles of aMPV are enveloped, rounded or elongated, varying in size between 150 and 800 nm. The viral genome consists of a single-stranded RNA monocatenary molecule of negative polarity. The aMPV are fragile in the environment and easily inactivated by common disinfectants. Their horizontal transmission is very effective during the week following the infection. Transmission is by air and by direct contact.

The prevention of disease requires proper flock management and control of predisposing or aggravating factors. Prophylactic vaccination is possible from vaccines developed from aMPV subgroups A or B in Europe or from aMPV subgroup C in the United States. Live attenuated vaccines can be administered to young birds by nebulization or by drinking water. Adjuvanted inactivated viral vaccines can then be given by injection to breeders before the start of egg production. The combination of the two types of vaccine provides a higher and more homogeneous immunity level, and a better protection against a drop in egg production.



CORYZA

Infectious coryza is an acute respiratory disease of chickens caused by the bacterium *Avibacterium paragallinarum* (once known as *Haemophilus paragallinarum*), it is a Gram-negative, pleomorphic, nonmotile, catalase-negative, microaerophilic rod that requires nicotinamide adenine dinucleotide (V-factor) for in vitro growth. Once a flock has been infected, it is a constant threat to any nearby uninfected flocks. Transmission is typically by direct contact, airborne droplets and contamination of drinking water. "All-in/all-out" production can be a very effective management tool. Commercial farms that have multiple-age flocks tend to perpetuate the disease. Egg transmission does not occur.

Areas	Species	No of Cases
Karanganyar, Central Java	Layer	1
Boyolali, Central Java	Layer	1
Magetan, East Java	Layer	1
Blitar, East Java	Layer	1

Infectious coryza is characterized by nasal discharge, sneezing, and swelling of the face under the eyes. In the developed countries such as Australia and the USA, infectious coryza occurs primarily in pullets and layers and only occasionally in broilers. In the developed poultry industries, the impact of the disease is primarily due to a drop in egg production – 10 to 40%. In other countries, infectious coryza often occurs in very young chicks, even as young as three weeks of age. Poor biosecurity, poor environment and the stress of other diseases are probably the main reasons why infectious coryza is more of a problem in such countries. The disease is often associated with significant mortalities under these conditions. Infectious coryza vaccines are widely available. As Page serovars A, B and C are not cross-protective, it is essential that vaccines contain the serovars present in the target population. The immunization should be completed three to four weeks before infectious coryza usually breaks out on the individual farm.

Early treatment of infectious coryza is important. Water medication is recommended immediately until medicated feed is available. Antibiotics should only be used with due care and attention to the local regulatory environment. In more severe outbreaks, although treatment may result in improvement, the disease may recur when medication is discontinued. Preventive medication may be combined with a vaccination program in which started pullets are to be reared or housed on infected premises.



In July 2024, Infectious Coryza came out with 4 cases or 6% of all reports. All cases from layers. Details of infected area can be found in Figure and Table 7.

AI H9

The last place for the most reported disease in July 2024 was held by Avian Influenza subtype H9 infection. AI H9 was reported 4 times, 2 reports each from broilers and layers, this number equal to 6% of the total reports. The area affected by AI H9 is shown in Figure and Table 8.

Areas	Species	No of Cases
Banyuasin, South Sumatera	Layer	1
Tangerang, Banten	Layer	1
Batang, Central Java	Broiler	2

Avian Influenza infection in poultry, primarily chickens, can cause clinical disease or losses in production for the affected flocks. The virus can be generally divided into viruses that cause a localized infection, often primarily restricted to the respiratory or enteric tract, and viruses that cause systemic infections. The viruses that cause localized infections are usually referred to as low pathogenic avian influenza (LPAI) viruses, and typically these viruses do not cause high mortality in affected flocks.

In general for LPAI viruses the disease symptoms are restricted to the respiratory and enteric tract and can include lesions in the sinuses, trachea, bronchi, lungs, airsacs, and intestines. Lesions can include mucopurulent or caseous inflammation, thickening of airsacs, edema of the serosa and other localized lesions. Evidence of enteritis may also be seen with some strains of virus. Internal lesions are rare but can include peritonitis, pancreatitis, lesions in the reproductive tract, and in the kidney. Decreases in egg production without other clinical signs are common in layers or breeders in production.

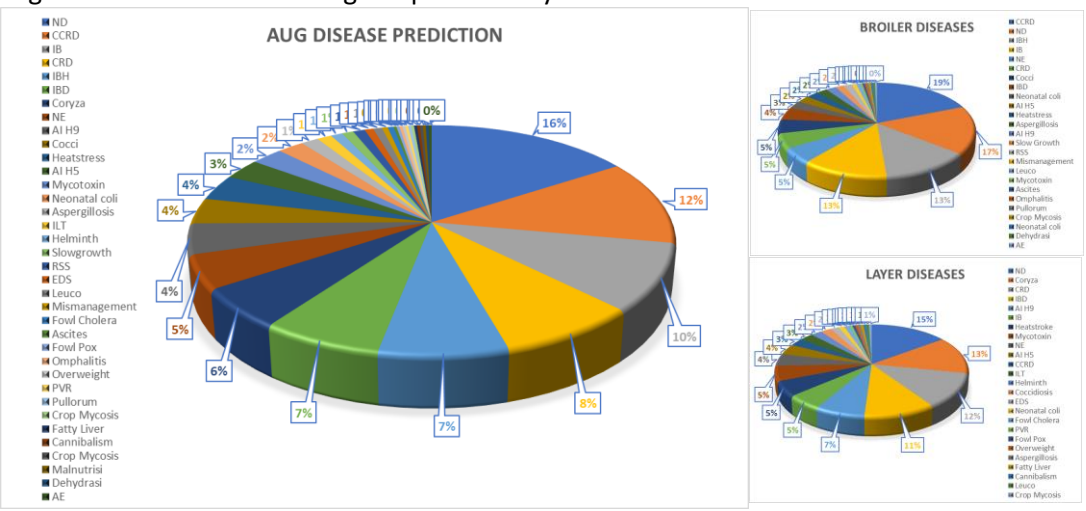
The influenza reservoir, is in wild birds including ducks, gulls and shorebirds. All 16 HA and 9 NA subtypes of viral genes are found in wild birds, with certain types of ducks, like pintails and mallards, having the highest prevalence of infection.



The LPAI viruses can be of many different hemagglutinin and neuraminidase subtypes. H9 is a LPAI virus. It is only a rare occurrence that these low pathogenic viruses mutate into the highly pathogenic forms of the virus.

AUG 24 PREDICTION

Based on surveillance data for 6 consecutive years, we are able to predict the dominant disease occurring in a certain month. For the prediction of disease incidence in the next July 2024, the percentage of disease occurring in the same month during the previous 6 years is as follows.



The Indonesian poultry business will still facing multiple threats in August 2024. Especially when the extreme weather continuous. The three diseases with the highest probability are: ND 16%, CCRD 12%, and IB 10% opportunity. The three highest predicted diseases in broilers are : CCRD 19%, ND 17%, and IBH 13% opportunity. While layers prediction are ND 15%, Coryza 13% and CRD 12% probability. This prediction is intended to help the poultry community improve its prevention program, not as a guarantee of accuracy.

CONCLUSION

In July 2024, the GPS Diseases Surveillance program have been reporting 68 cases from 21 different diseases or condition – broilers reported 35 cases while layes reported 33 cases. From the highest, eight most prominent diseases are Chronic Respiratory Disease, Infectious Bronchitis and Complicated Chronic Respiratory Disease each with 8 reports or 12% of the total reports, followed by Newcastle Disease with 7 cases (10%), Infectious Bursal Disease with 5 cases (7%), Avian Metapneumovirus, Infectious Coryza, and Avian Influenza H9 each with 4 cases (6%). Other diseases were Inclusion Body Hepatitis, Avian Influenza H5, DOC Quality, Mycotoxicosis, Helminthiasis, Neonatal coli, and Heatstress each with 2 cases (3%). And the rest of the reports are Coccidiosis, Runting and Stunting Syndrome, Necrotic enteritis, Salmonellosis, Egg Drop Syndrome, and Infectious Laryngotracheitis each with 1 case (1%) consecutively. For more detail information of this report please contact Ceva Animal Health Representative in your area to help and provide solution to your poultry problems.