Veterinary Epidemiological Bulletin Sri Lanka

Volume 16 No 03

July—Sept 2023

Department of Animal Production and Health, P.O. Box 13, Peradeniya, Sri Lanka.

Contents

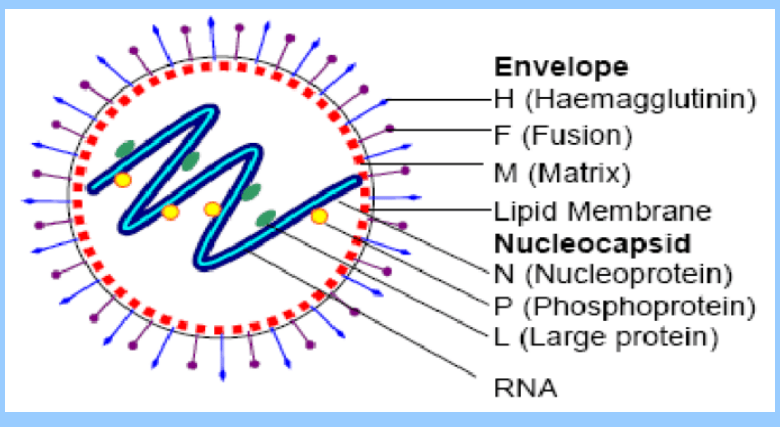
Peste des Petitis Ruminitis

Peste des petitis ruminitis (PPR) is an acute, highly contagious viral disease which also known as 'Goat plaque' due to it's high mortality. It is a WAOH listed, notifiable, trans-boundary disease which affect to sheep and goats. The disease is considered as one of the main constraints in augmenting the productivity of small ruminants in developing countries and particularly severely affects poor farmer's economy.

Earlier, four lineages of PPR was restricted to certain geographical areas of the world; as lineage I in Western and Central Africa, and lineage IV in India and Middle East. But in recent years, this has been disturbed by appearing lineages in new areas, for examples lineage IV is found from Northern and Central African region.

Etiology

The causative organism of the disease is PPR virus. It is a member of the *Morbillivirus* genus in the Paramyxoviridae family. This virus is closely related to the rinderpest virus, which affect goats, sheep, camels and some wild small ruminants. The virus preferentially replicates in the lymphoid tissues and in the epithelial tissues of the GI and respiratory tracts of animals, where it produces characteristic lesions.



Epidemiology

Morbidity and mortality of the disease is vary within the affected country, because of two factors; immune status of the affected population and extents of viral virulence. Morbidity and mortality can be high as 80% - 100% in some outbreaks.

PPR virus and Rinderpest virus are cross-protective. Therefore, it can be suspect as the reason for the rapid expansion of PPR virus within endemic zones and into new regions may be due to the disappearance of the cross protection previously afforded by natural Rinderpest infection of small ruminants. In certain endemic areas of PPR, Rinderpest vaccine has been used to prevent PPR viral infection in small ruminants.

Many wild artiodactyls are susceptible to PPR virus (PPRV) infection, and some outbreaks have threatened endangered wild populations. The role of wild species in PPRV epidemiology is still unclear.

Transmission

PPR is transmitted by direct contact with the secretions, excretions of the sick animals and inhalation. Disease transmission can occur during the incubation period (4-5 days) of the disease. There is no carrier states of the disease.

Certain small wild ruminant species like gazelle and white tailed deer are fully susceptible to the disease and play an important role in epidemiology of the disease. Cattle, buffalo and pigs also can become naturally or experimentally infected with PPR infection, but these they are dead-end hosts, because they exhibit no clinical signs and do not transmit the disease to any other animal in-contact.

Clinical Signs and Lesions.

Sudden rise of body temperature to 40°C – 41.3°C is prominent. Affected animals appear ill and restless with dull coat, dry muzzle, congested mucous membranes and loss of appetite.

- In initial stages, nasal discharge is serous, later it becomes mucopurulent with putrid odor to the breath. Small necrotic areas of the mucous membrane of the nasal cavity floor also observed in severely affected animals. Bronchopneumonia, characterized by coughing may be developed at lastter stages of the disease.

Mucopurulent nasal discharge

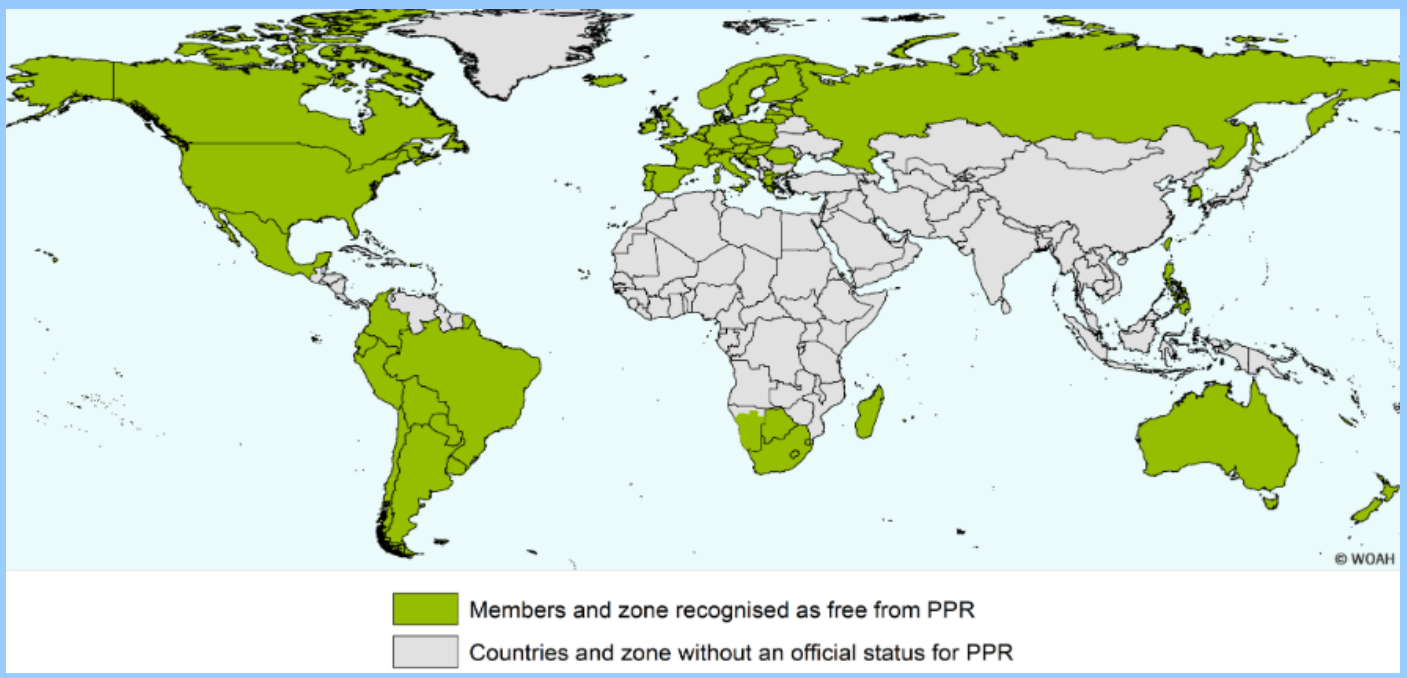
Conjunctivitis and crusting on medial canthus of eye

- Eye lesions include congested conjunctivae, crusting on medial canthus of the eye and certain cases profuse catarrhal conjunctivitis with matting of the eyelids.
- Signs of the gastrointestinal tract include the necrotic stomatitis in lower lip and gum, gumline of the incisor teeth. In more severe cases necrotic lesions in the dental pad, palate, cheeks and their papillae, tongue and pharynx are observed. These erosions are shallow, reddish, raw base and later become pinkish white; they are bounded by health epithelium with sharply demarcated margins. Profuse diarrhea accompanied by dehydration, emaciation and hypothermia may lead death in 5-10 days.

Stomatitis on gums

necrotic lesions dental pad and tongue

- Severe PPR lesions are less common in the small intestines. Streaks of hemorrhages may be present in the first portion of the duodenum and terminal ileum. Payer's patches may be severely affected including sloughing off of entire patches of lymphoid tissue. More severely affecting part is large intestine.



WOAH members' official Peste des petitis ruminitis status map

- Lesions may develop around the ileocecal valve, cecocolic junction and rectum. These streaks of congestion along the folds of the intestinal mucosae, results in zebra-striped appearance.

Diagnosis

Differential diagnosis has to be done from GI parasitic infections, Contagious Caprine Pleuropneumonia, Contagious Ecthyma, Heartwater, Coccidiosis and mineral toxicities.

A presumptive diagnosis of PPR can be based on the clinical signs of affected animals, pathological lesions and epidemiological findings of the disease. Disease confirmation has to be done by viral isolation and identification through ELISA and PCR techniques.

Virus isolation is definitive for PPR diagnosis; however, it is labor intensive and time-consuming. Therefore, antigen capture ELISA and reverse-transcription PCR assay are preferred laboratory tests for confirmation of the virus. For antibody detection, competitive ELISA and virus neutralization are the tests recommended by the WOAH.

The suitable specimens are lymph nodes, tonsils, spleen, whole lung for antigen or nucleic acid detection and serum for antibody detection.

Treatments

There is no specific treatment for PPR. Treatment for secondary bacterial and parasitic complications may decrease the mortality rates in affected flock or herds.

Control and Prevention

Efficient PPR vaccines are also available which provide life-long protective immunity in vaccinated animals. Current researches indicate that there is a strong level of cross protection between different lineages, because the all lineages are in the same serotype and have little antigenic divergence. This means the vaccines can be expected to give protection regardless of the lineage that the vaccine strain is derived from. These vaccines play an important role in disease control and eradication programs.

Quarantine, movement restrictions, cleaning and disinfection can be useful in controlling of disease outbreaks.

Geographical Distribution of PPR

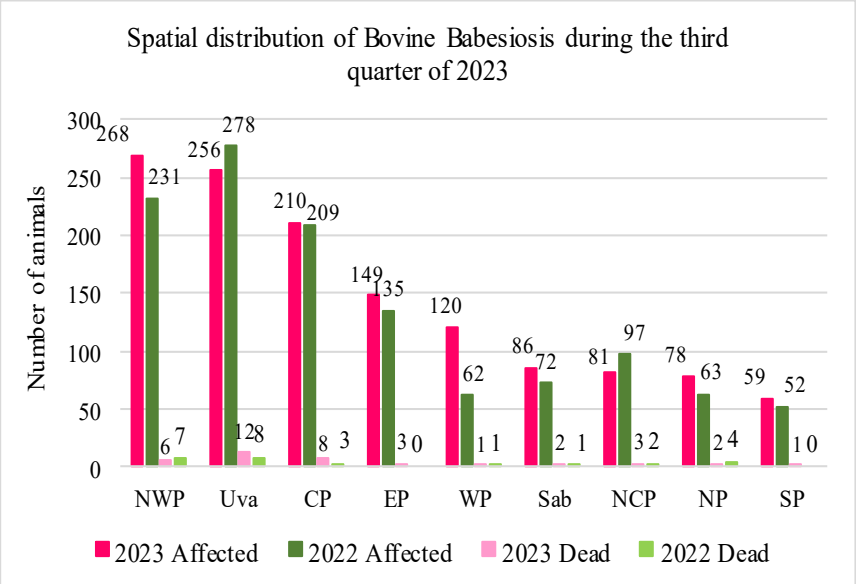
The disease was first reported in 1942 in Ivory Coast. Since then, the disease has spread far beyond its origin in Western Africa. In the past 15 years, its dissemination was rapid resulting the disease in over 70 countries in Asia, Africa, Near and Middle East and Europe.

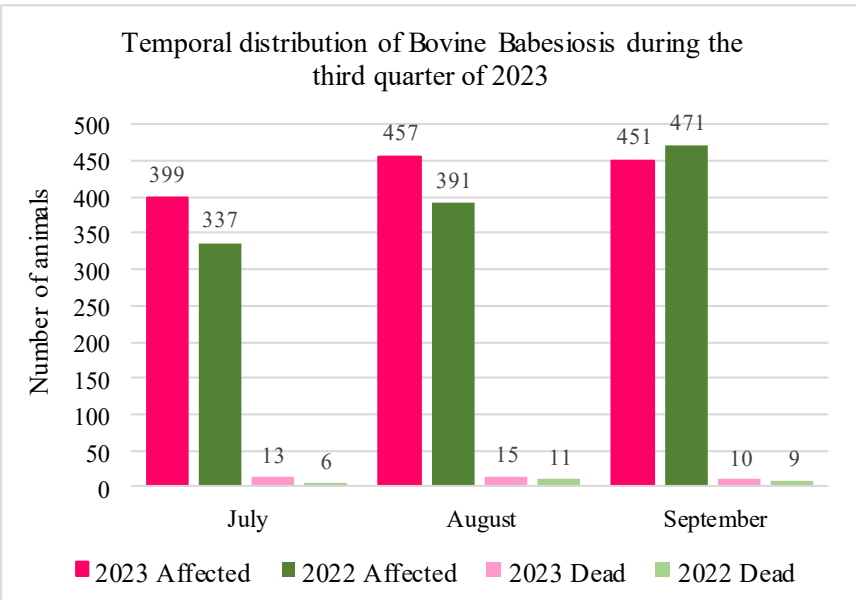
- ***Compiled by: Dr. D. R. K. Perera.***
- ***Reference:***
  - ***https://www.merckvetmanual.com***
  - ***https://www.fao.org***
  - ***https://www.ecdc.europa.eu***
  - ***https://www.woah.org***
  - ***https://www.researchgate.net***

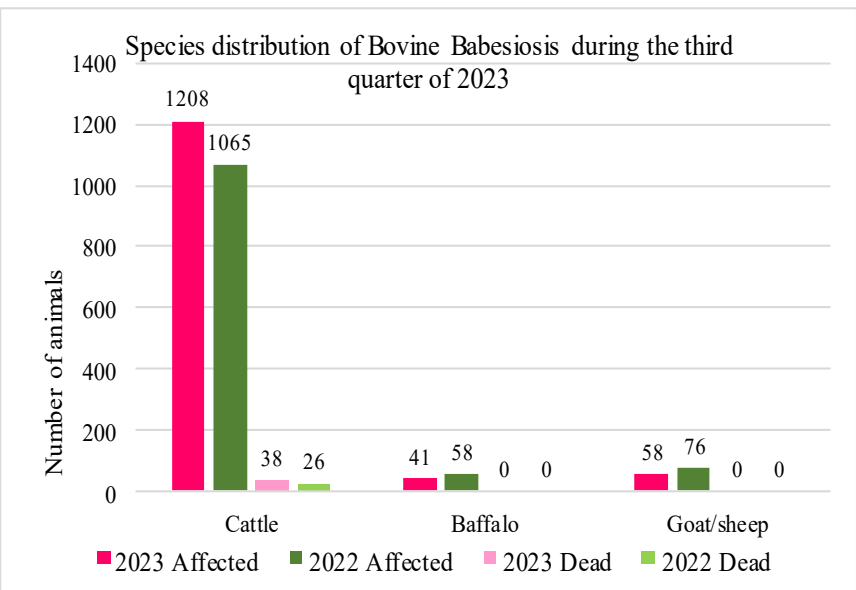
2. Status of Livestock Diseases - Third Quarter (July - Sept) - 2023

2.1 Bovine Diseases

2.1.1 Babesiosis :







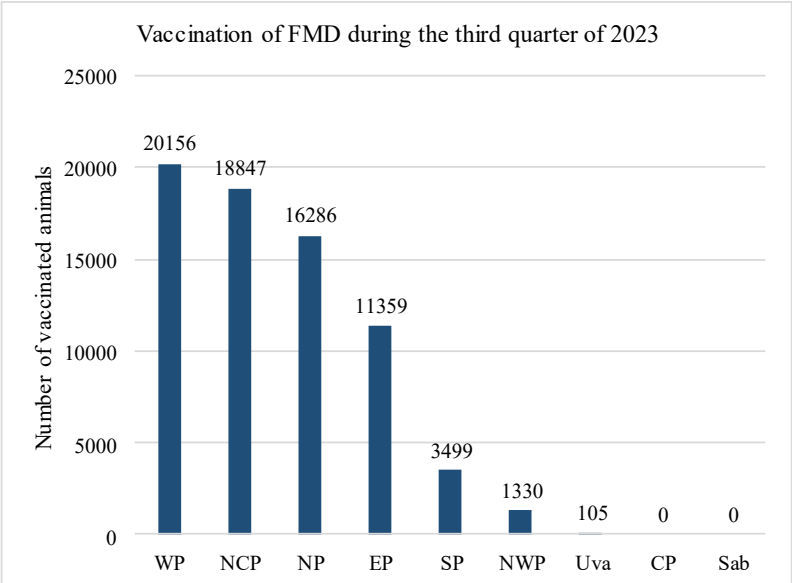
Bovine Babesiosis is an endemic disease in Sri Lanka, which generally reports from all nine provinces of the country throughout the year. During the third quarter of 2023, 1307 Bovine Babesiosis cases were reported with 38 animal deaths. It reveals the increase of Babesiosis cases by 9% in this quarter. Because it was reported only 1119 cases with 26 deaths during the same quarter of 2022. Usually higher number of cases are reported from the provinces where have higher cattle and buffalo populations and extensive management of them.

According to the spatial distribution graph of Babesiosis, there is a slight difference in distribution patterns in two quarters. The highest number of cases were reported from North western, Uva and Central provinces of the country as usual. They represents over 56.16% disease incidence in 2023 third quarter. The least number of Babesiosis cases were reported from Sabaragamuwa province as 59 cases with 1 death. The most significant difference in disease incidence was reported from Western province as 93.55% increase in disease incidence in 2023 third quarter than 2022 .

Temporal distribution patterns throughout the period show differences from each other as highest disease incidence was reported in August month of 2023 third quarter, but was in September in 2022 third quarter.

Majority of the Babesiosis cases were reported from cattle population of the country as 92.42% from whole disease incidence during the period.

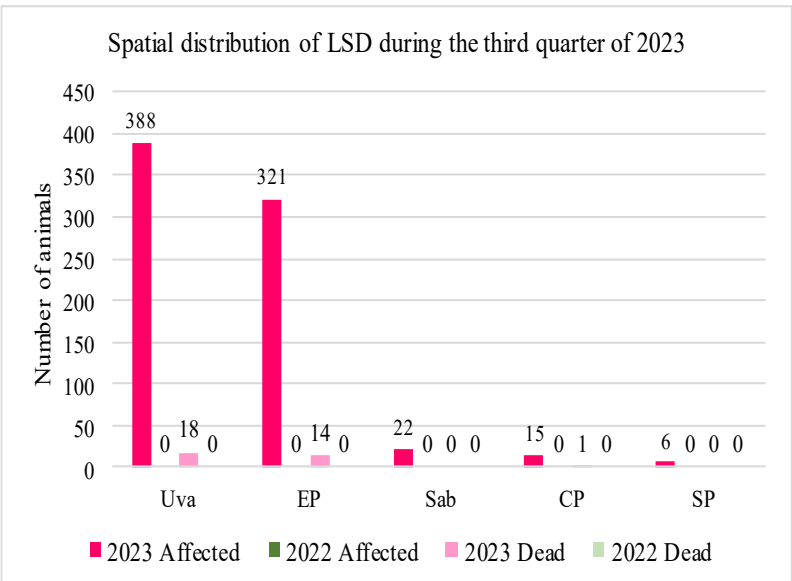
2.1.2 Foot and Mouth Disease:

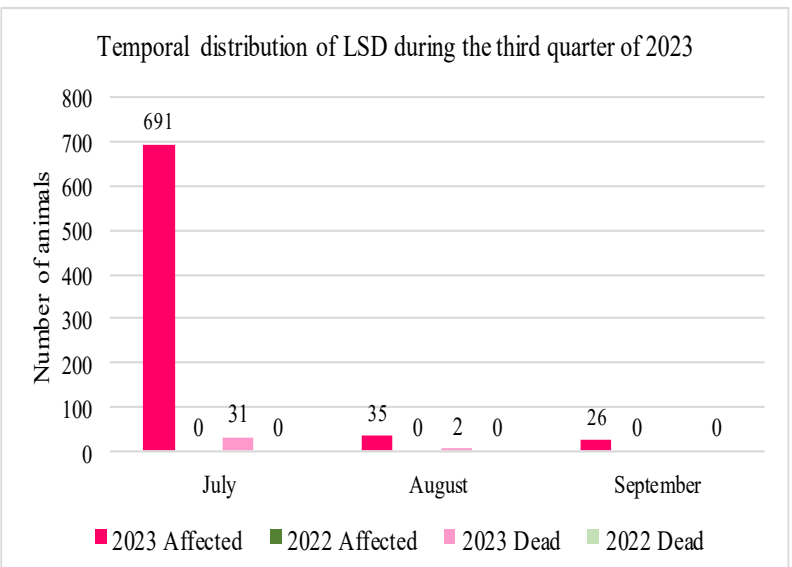


During the third quarter of 2023, Foot and Moth Disease (FMD) was not reported in any province of Sri Lanka.

But preventive vaccination program was continued in risk areas vaccinating susceptible animals in Western, North Central, Northern, Eastern, Southern, North Western and Uva provinces of Sri Lanka. Majority of the animals were vaccinated in Western, North Central and Northern provinces as they have identified as the high risk areas.

2.1.3 Lumpy Skin Disease:





Lumpy Skin Disease (LSD) has become a significantly affecting disease to the livestock industry of Sri Lanka though it was introduced recently to the country.

During the third quarter of 2023 very high number of diseased cases were reported in July from Uva and Eastern provinces as 388 and 321 cases respectively. This represents 94.28% from the total 752 reported cases during the quarter. Few number of cases were also reported from Sabaragamuwa, Central and Southern provinces as 22, 15 and 6 cases respectively.

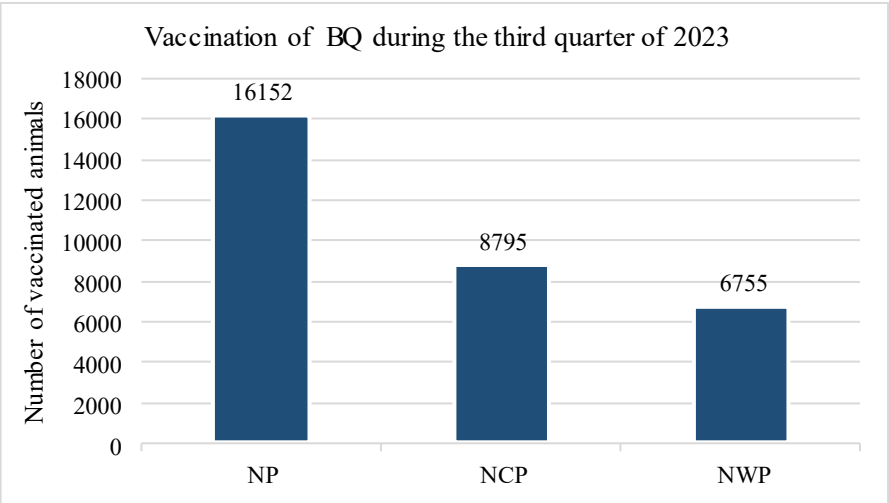
Temporal distribution revealed very high disease incidence in July month as 691 cases with 31 deaths. But towards the end of the quarter disease incidence has been reduced upto 26 cases per month without any deaths.

Lumpy Skin Disease status of 2023 third quarter is significantly different from the disease incidence of previous year corresponding quarter as there were no any LSD infected cases reported in Sri Lanka during third quarter of 2022.

2.1.4 Black Quarter:

Black Quarter disease is considered as an endemic disease in the certain provinces of Sri Lanka according to it's epidemiology throughout past few years. But during the third quarter of 2023, diseased cases were not reported from any province of the country. But corresponding quarter of the previous year reported 10 cases from Northern Province.

Epidemiologically susceptible provinces to the disease are Northern, North Central and North western Provinces of Sri Lanka.

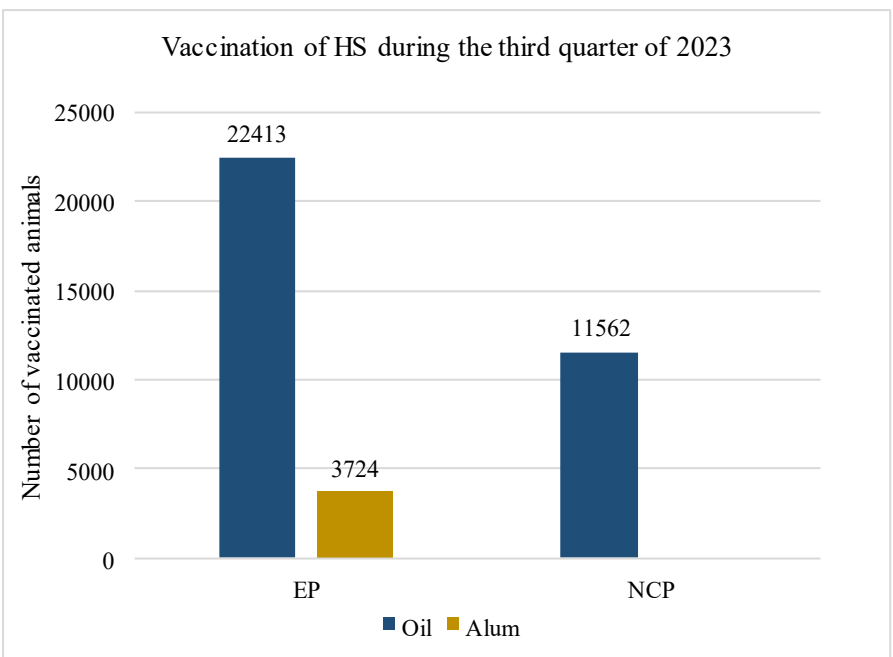


Prophylactic vaccination program is conducted annually mainly targeting those provinces and their temporal distribution pattern. During the third quarter of 2023 the immunization of the animals through vaccination is indicated in the graph. According to that, 16152 animals in Northern province, 8795 animals in North Central province and 6755 animals in North Western Province were vaccinated against Black Quarter.

2.1.5 Hemorrhagic Septicemia:

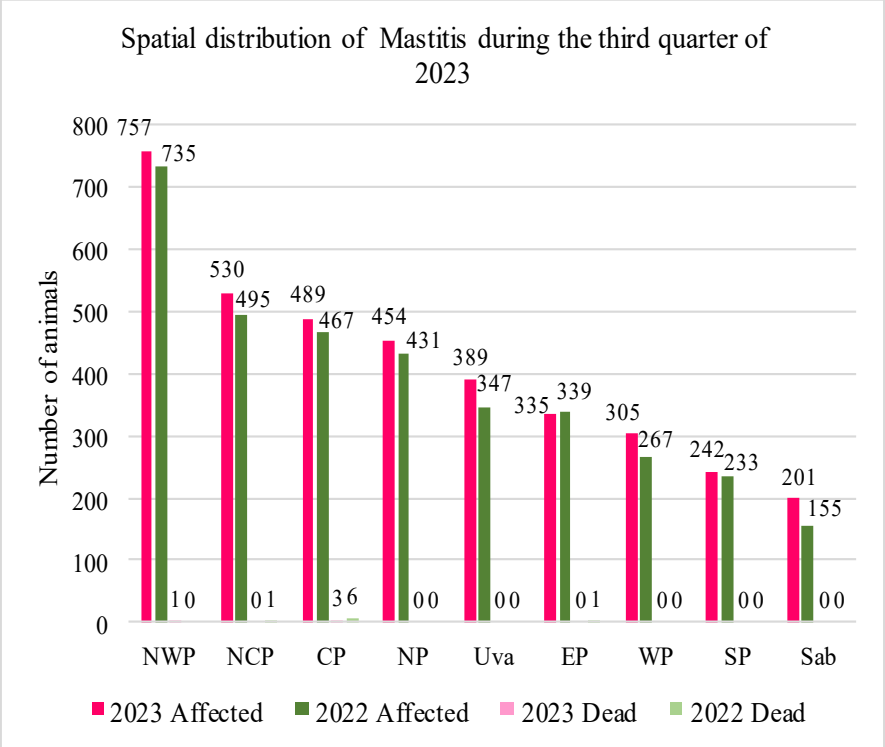
During the third quarter of the 2023, outbreaks of Hemorrhagic septicemia were not reported from any province of the country.

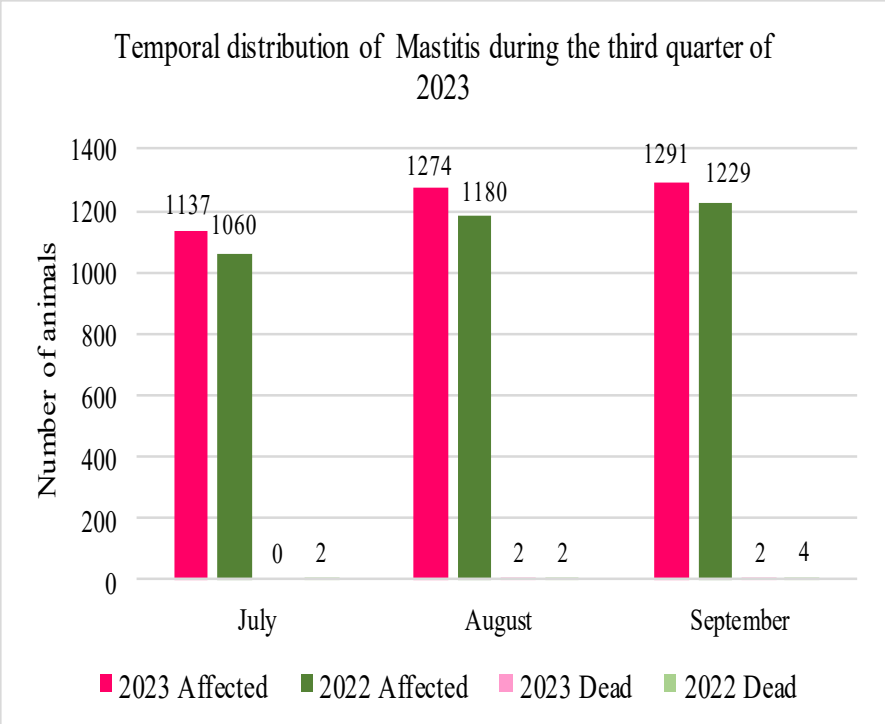
Annual vaccination program is conducted by DAPH with the help of field Veterinary Surgeons to prevent and control the disease in susceptible provinces of the country. Oil base vaccine, which use as prophylactic measure, was used mainly in NCP and EP provinces.



22413 vaccine doses to Eastern province and 11562 vaccine doses to North Central Province were distributed during the third quarter of 2023. Alum adjuvant containing vaccine was used in the areas where disease or suspected outbreaks occurred, to provoke an strong immune response within short period time as a control measure. According to the reported data 3724 Alum vaccines were used in Eastern province during the third quarter of 2023.

2.1.6 Mastitis:





Mastitis Control Program	
Amount of CMT reagent (Liter) issued	162
Performed Mastitis screening (CMT) Tests	5455
Tested milk samples for ABST	296
Amount of teat dip solution issued (Liter)	1560
Amount of Udder infusion vials freely issued	
Lactating Cow	4088
Dry Cow	1849

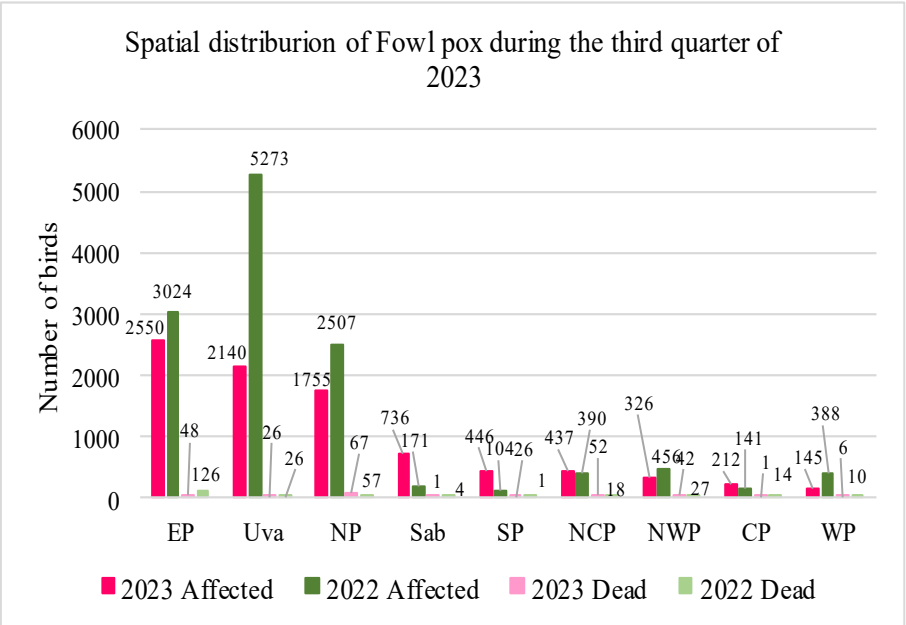
During the third quarter of 2023, Mastitis cases were reported from all nine provinces of the country. Total number of cases was 3702, and it is 6.7% increase in total reported cases than the reported cases during the same period of the previous year. Majority (20.45%) of cases were reported from North Western province as 757 cases with 1 death. Spatial distribution of both quarters show similar distribution patterns with slightly higher disease incidence in each province during current quarter except in Eastern province.

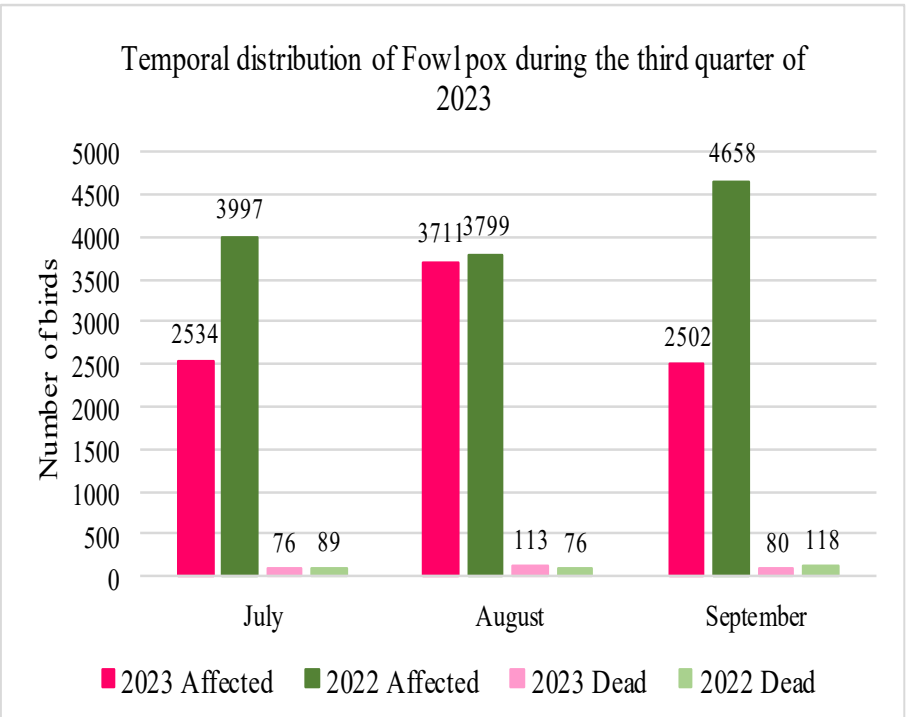
Temporal distribution also shows similar pattern as previous year but increase in the reported cases in each month. Average monthly disease incidence during the current year considering quarter is 1234 cases while it was 1156 in previous year corresponding quarter.

In order to control the Mastitis prevalence in the country, DAPH has implemented a Mastitis Control Program via Veterinary Investigation Offices in each district of the country. Under this program, field and laboratory mastitis identification tests, laboratory microbial culture, isolation and antibiotic susceptibility tests are performed. Further, issuing of teat dip solution as precautionary measure as well as dry and lactating intra-mammary infusions as treatments are freely distributed among farmers when required. Contribution of this program to control the mastitis during the third quarter of 2023 is indicated in the given table.

2.2 Poultry Diseases

2.2.1 Fowl pox:





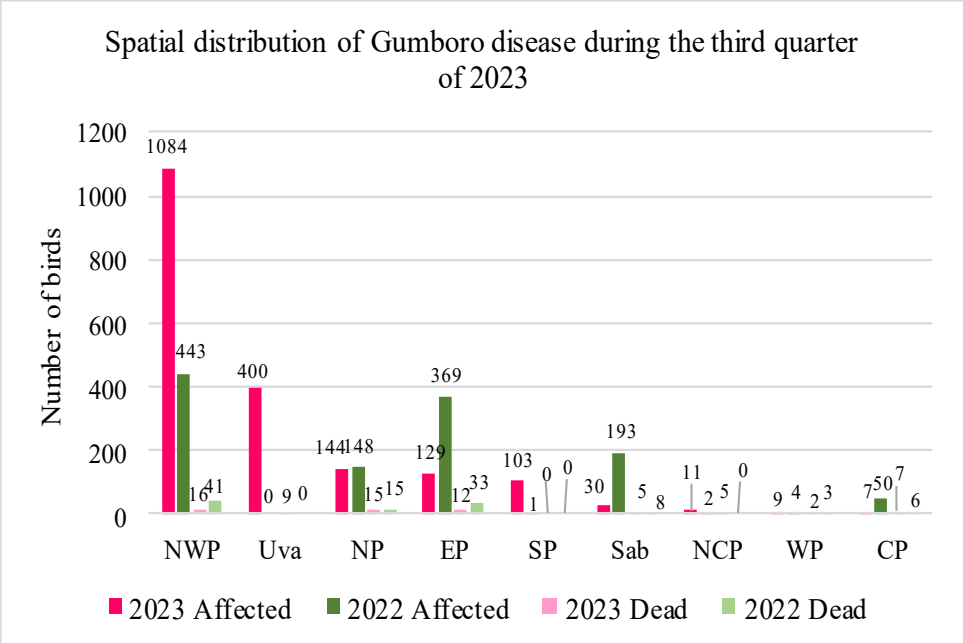
Fowl pox is one of the common viral disease in Sri Lanka which affects the poultry. Due to it's contagious nature, it is usually reported in high numbers from almost all the provinces of Sri Lanka.

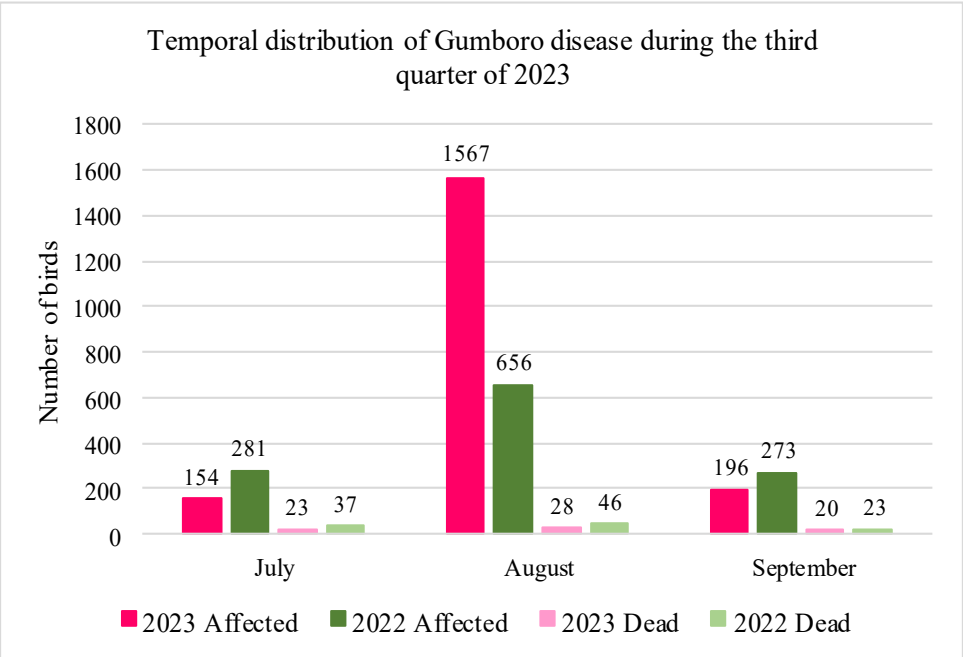
During the third quarter of 2023, totally 8747 birds were affected resulting 269 deaths. This amount is 29.76% reduction of total cases than previous year same quarter, as it was reported 12454 cases with 283 deaths. Majority of the cases were reported from Eastern province as 29.15% of total reported cases. Uva and Northern provinces also reported considerably higher number of cases. Spatial distribution of the disease in third quarter of 2023 is significantly different from 2022 third quarter. Most significant difference in disease incidence was reported from Uva province as 59.41% reduction in current quarter.

Temporal distribution of the disease during the considering quarter shows fluctuation in monthly disease incidence with significant difference from previous year. Third quarter of previous year reported the highest number of cases in September, but in 2023 highest number of cases were reported in August month as 3711 cases with 113 deaths of birds.

As preventive measure of the disease, vaccination of the birds in young and growing age is practiced currently in small to large scale commercial and backyard farms as it can rapidly spread among the birds if it is introduced to an unvaccinated bird flock. Although it does not cause high mortality rate, it may lead high morbidity and considerable production loss in commercial layer birds.

2.2.2 Gumboro Disease:





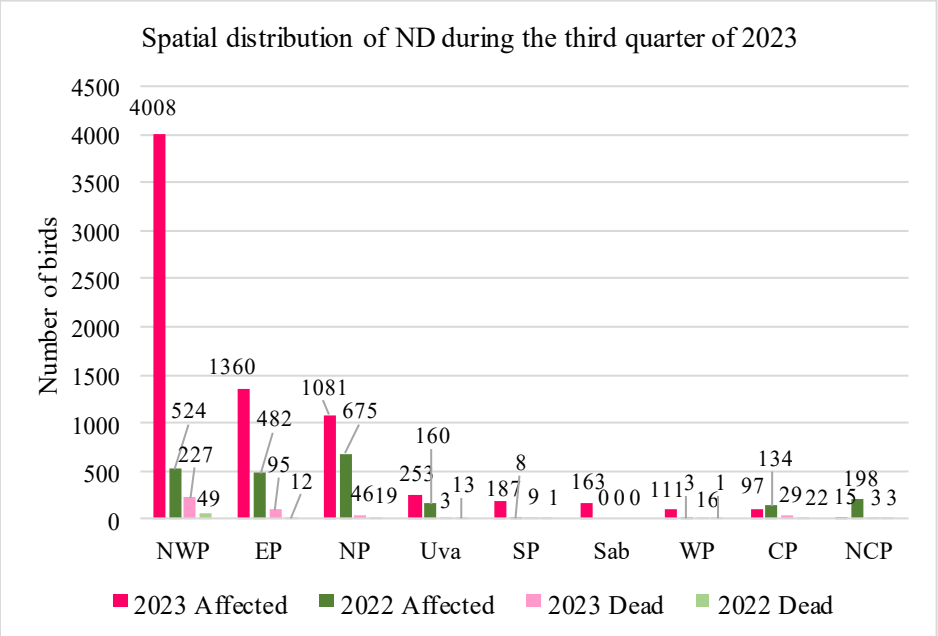
Gamboro disease which known as Infectious Bursal Disease is considered as an economically important avian disease in Sri Lanka. Since this is a highly contagious disease with high morbidity and high mortality, vaccination of birds at very young age is practiced in Sri Lanka as the main preventive measure of the disease.

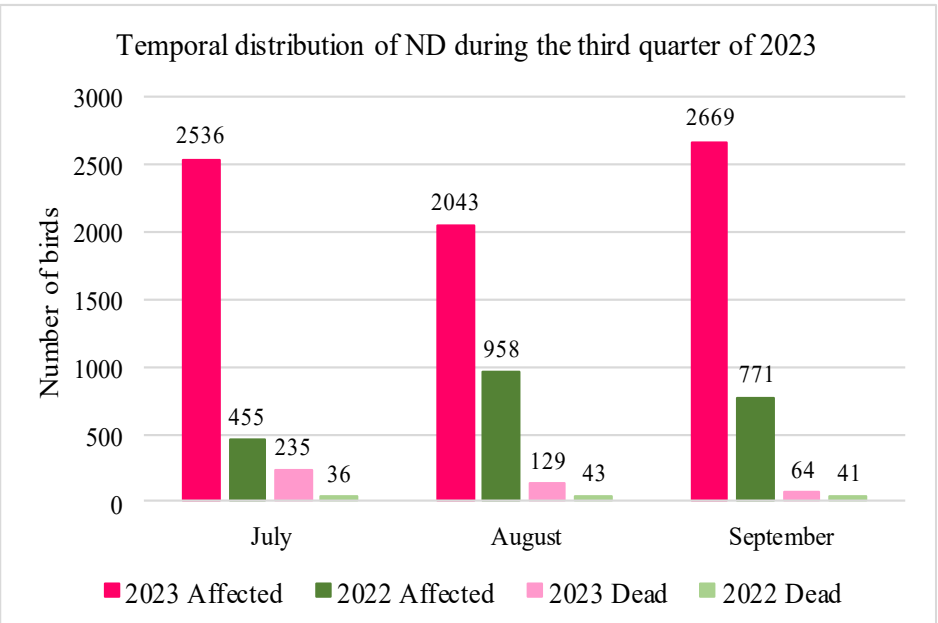
During the third quarter of 2023, 1917 cases and 71 bird deaths were reported indicating a remarkable increase in disease incidence. This is a 58.43% increase in disease incidence when comparing with the corresponding quarter of the previous year.

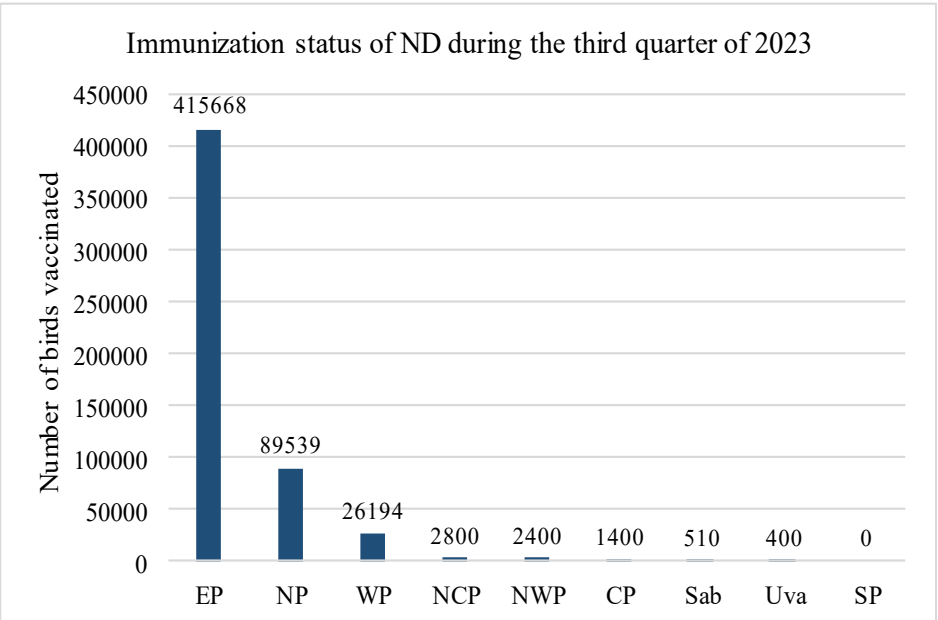
Spatial distribution revealed the presence of disease in all nine provinces of the country. Majority of the cases (1084 cases and 16 deaths) were reported from North Western Province as 56.54% from total disease incidence. Most significant differences in disease occurrences were reported from North Western and Uva provinces during the considering period.

Temporal distribution of the both quarters show similar pattern with different monthly disease incidences. Highest number of cases were reported in August month as 1567 cases with 28 deaths where as it was only 656 cases with 46 deaths during the same month of previous year. This is over two times increase in disease incidence. But the disease incidence in rest of the months of the quarter have been reduced in current quarter when compared with same months of 2022. However the least dead: diseased ration also reported in August month as only 28 deaths per 1567 diseased cases.

2.2.3 Newcastle Disease:







Newcastle disease is the most concerning avian disease in Sri Lanka. Currently it is controlled mainly by routine vaccination of susceptible birds species.

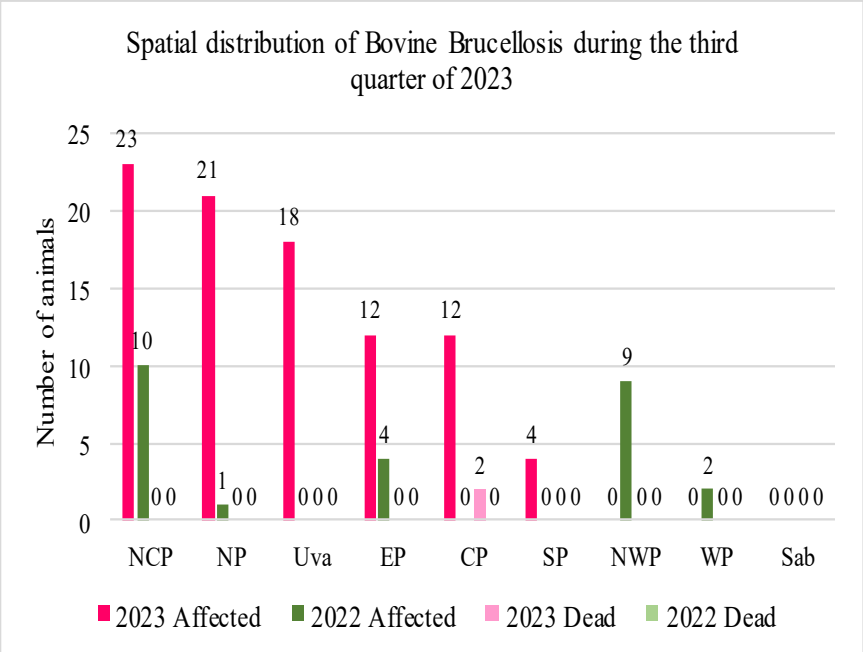
During the third quarter of 2023 total number of diseased cases 7275 with 428 deaths. This is over two times increase in disease incidence when comparing with the same quarter of the previous year. Remarkable increase in disease incidence was reported from North Western province as 4008 cases, which represents 55.09% from total. Eastern and Northern provinces also reported considerable amounts of cases as 1360 and 1081 respectively.

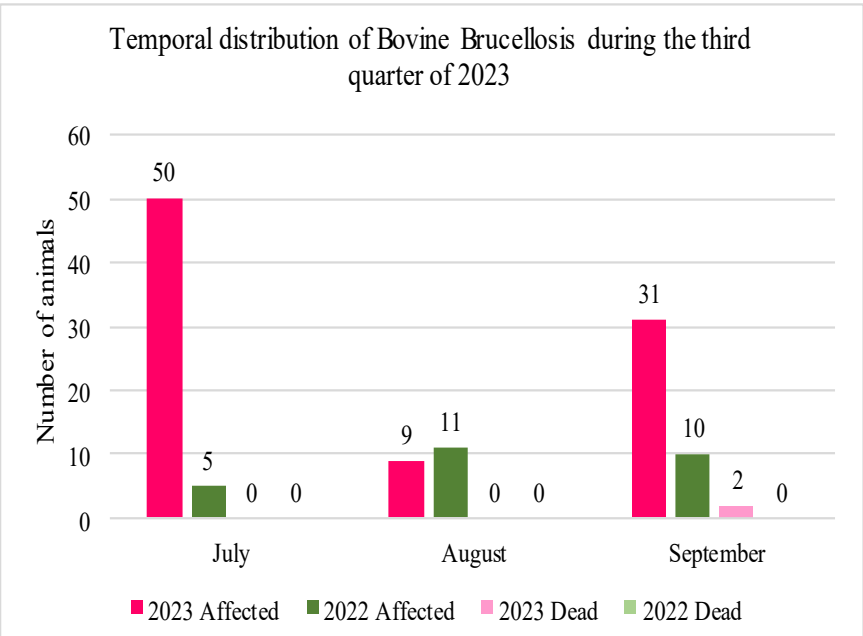
Temporal distribution of the ND shows the significantly higher monthly disease incidence during all three months of the current quarter than previous year. Out of them, highest incidence was reported in September month as 2669 cases with 64 deaths. Average monthly disease incidence during the quarter is 2416 while it was only 728 during the same quarter of 2022.

Under the Newcastle disease preventive vaccination program of DAPH, 538911 birds were vaccinated against the disease during the third quarter of this year. According to the reported data majority of the vaccines were used in Eastern and Northern provinces of the country.

3. Status of Zoonotic Diseases - Third Quarter (July—Sept) - 2023

3.1 Bovine Brucellosis :





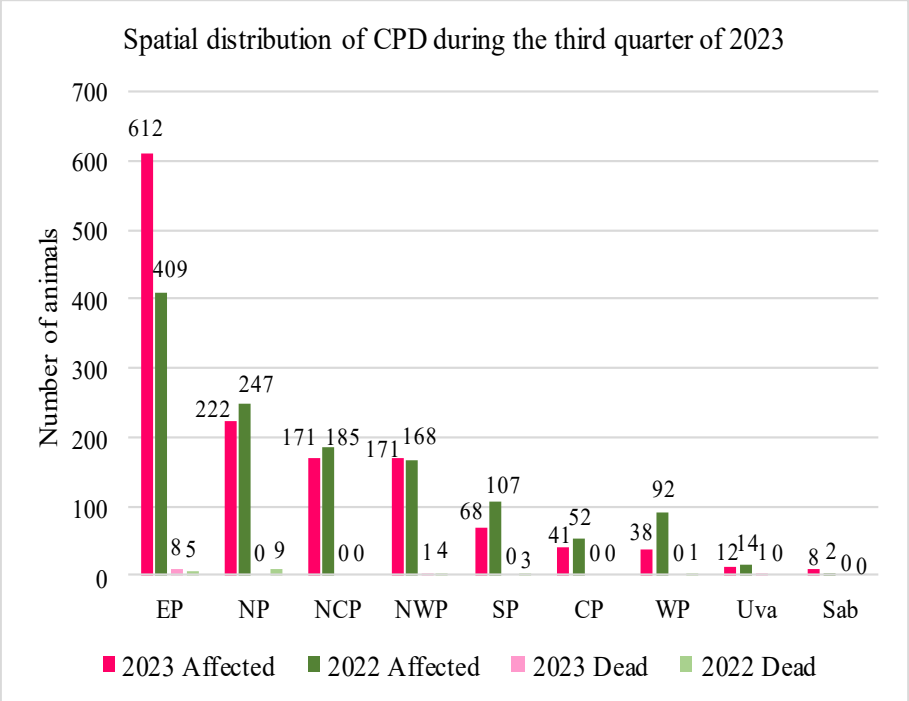
Brucella control program	
Number of milk samples screened by VIOs with MRT	1060
No. of animals screened by VIOs in suspected herds with RBPT	350
Number of samples submitted by VIOs to VRI for CFT	44
Number of susceptible animals vaccinated with S19 vaccine	948
Total number of samples subjected to RBPT (by VRI)	202
Number of RBPT positive samples	54
Number of CFT positive samples	48

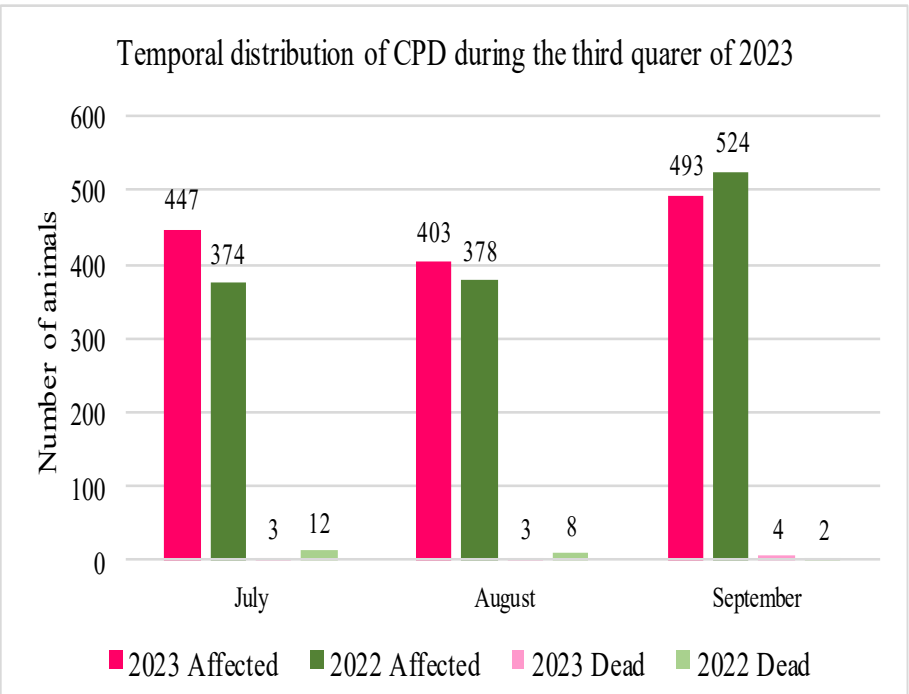
During the third quarter of 2023, Bovine brucellosis has been reported only from six provinces of Sri Lanka. Total disease incidence during the period is 90 cases, which is significantly higher than the comparing quarter of the previous year. Among them, highest incidence was reported from North Central province as 23 cases without any deaths. Highest increase in disease incidence was reported from Northern province while North Western, Western and Sabaragamuwa provinces not reporting any diseased cases during the period.

With regard to the temporal distribution data of the disease during the considering period of 2023, disease incidence has fluctuated vigorously from 50 cases at the beginning to 31 cases at the end of the quarter. According to that, over 50% of cases were reported in July month as 50 cases without deaths.

In order to control the Brucellosis in Sri Lanka, Brucellosis Surveillance and Control Program is conducted with the collaboration of VICs and VRI of DAPH. Under this program, 948 animals were vaccinated with S19 Brucella vaccine during the third quarter period. 1060 milk samples were screened by VIOs to identify the infected farms. Further, 350 animals in MRT positive farms were subjected to RBPT. Totally, 202 samples were tested with RBPT by VRI and 54 of them were positive. 88.88% of RBPT positive samples were got positive for CFT, confirming the presence of Brucella in 48 submitted samples.

3.2 Contagious Pustular Dermatitis:





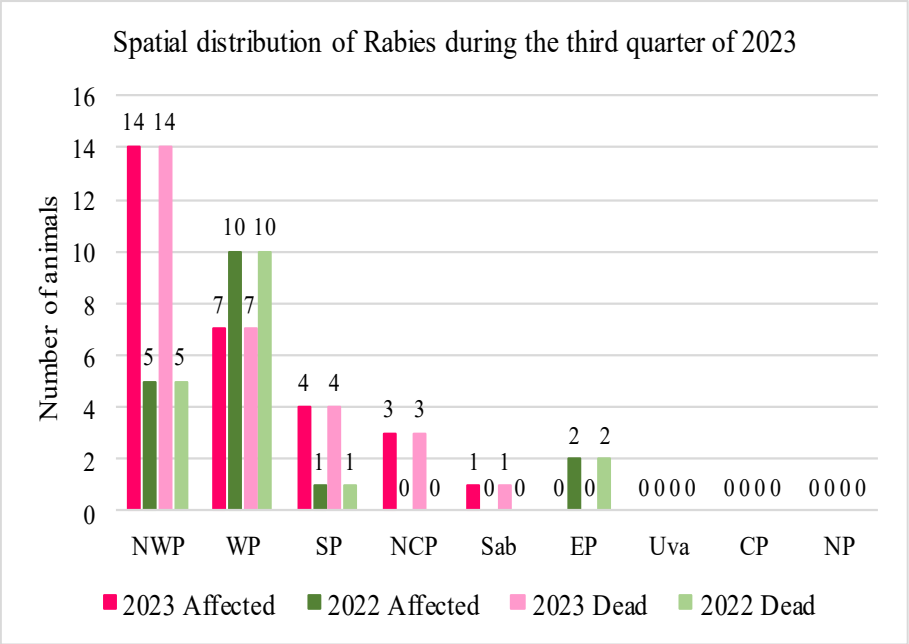
Contagious Pustular Dermatitis is a common caprine disease in Sri Lanka, which usually report from all nine provinces of the country during the all four quarters.

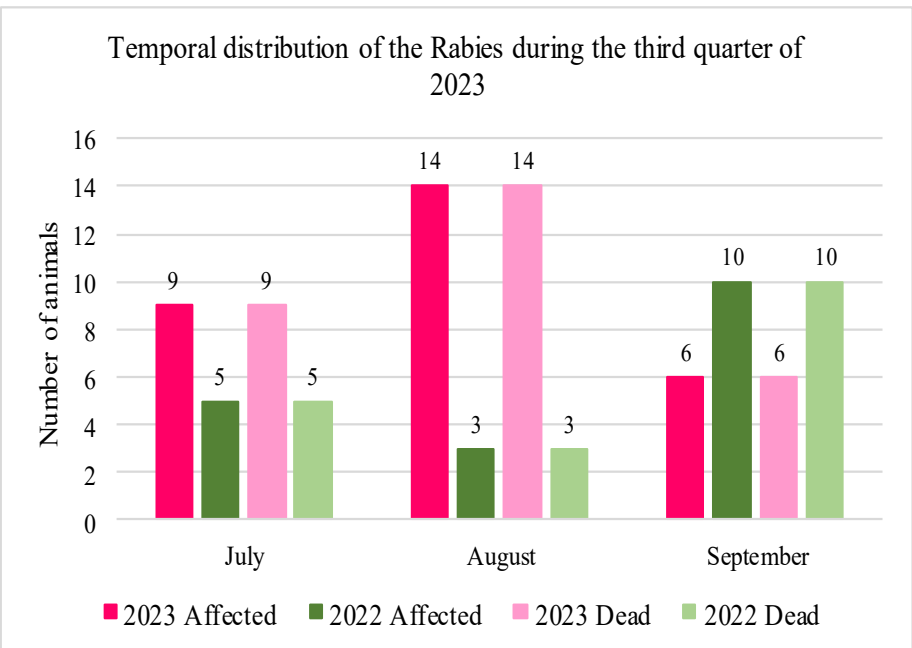
The total number of cases reported during the third quarter of 2023 was 1343 and 10 deaths. It is a 5.25% increase in reported cases, as it was only 1276 cases and 22 deaths during the same quarter of previous year. Spatial distribution of CPD during considering two quarters show quiet similar distribution patterns. Highest number of cases were reported from Eastern province in both quarters. It is 45.57% from total disease incidence. This is a 49.63% increase in disease incidence when comparing to previous year. Lowest disease incidence was reported from Sabaragamuwa province as 8 cases.

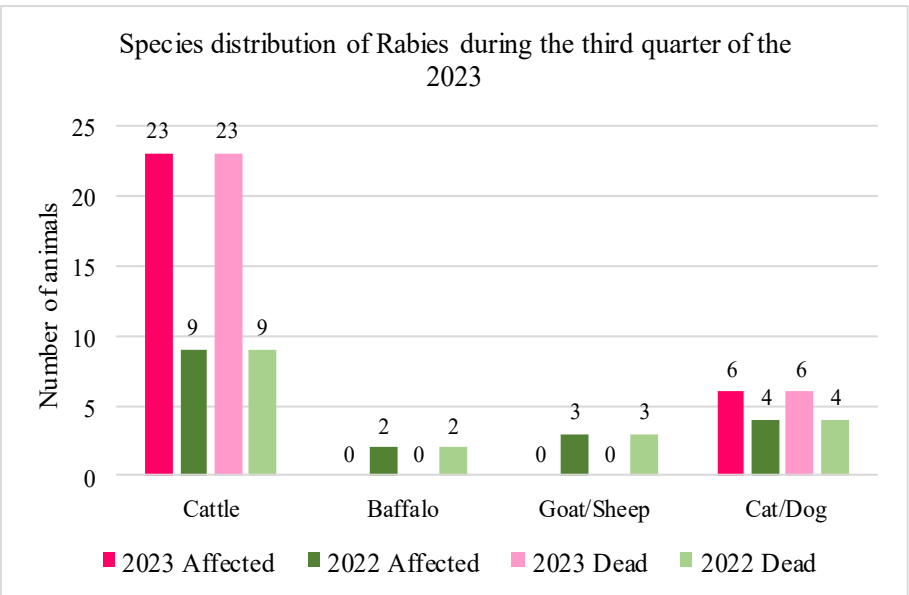
Temporal distribution of both quarters show similar distribution patterns. In both quarters, number of cases has been gradually increased towards the end of the considering periods resulting highest disease incidence in September month.

In order to control the CPD disease in field, vaccine production and distribution are done by Veterinary Investigation Officers in each district Veterinary Investigation Center. Under this program, totally 13 goat farms were vaccinated during the third quarter of 2023 with the aim of control the disease when outbreak of the disease in the herd. Majority of these vaccinated farms were located in Northern province.

3.3 Rabies:







Rabies is a multi-species fatal disease which can affect mammals like cattle, buffalo, goats, sheep, dogs, cats as well as humans. Though the disease is present in Sri Lanka, reporting animal rabid cases are very less in number.

During the third quarter of 2023, remarkable increase in animal rabies incidence can be seen when comparing to the third quarter od 2022. The total disease incidence is 29 cases, which is 61.11% increase than previous year. North Western, province reported the highest disease incidence with most significant increase in number of cases. But Rabid cases were not reported from Uva, Central and Northern provinces during both considering quarters.

Temporal distribution shows converse patterns as the disease incidence has been peaked during 2023 August month as 14 cases.

Among livestock population, as usual highest number of rabid cases were reported from cattle population as 23 cases during the current quarter.

Major source for the Rabies in livestock are bite of rabid dogs or wild animal attacks. In order to minimize the disease risk to humans and animals, routine vaccination of domestic and stray dogs are done by the Health Ministry as well as private veterinary practitioners of the country.

3.4 Highly Pathogenic Avian Influenza:

3.4.1 National HPAI Surveillance Program:

Se. No	District VIC	Serum samples from commercial poultry		Fresh droppings, cage swabs and cloacal swabs of migratory birds & Backyard poultry	
		No. tested	Results	No. tested	Results
1	Anuradhapura	65	Negative	380	Negative
2	Badulla	26	Negative	6	Negative
3	Batticaloa	15	Negative	60	Negative
4	Chilaw	100	Negative	400	Negative
5	Colombo	49	Negative	598	Negative
6	Galle	15	Negative	150	Negative
7	Gampaha	98	Negative	478	Negative
8	Jaffna	43	Negative	75	Negative
9	Kandy	120	Negative	81	Negative
10	Kalutara	_	_	30	Negative
11	Kegalle	61	Negative	232	Negative
12	Kilinochchi	45	Negative	100	Negative
13	Kurunegala	481	Negative	316	Negative
14	Mathale	15	Negative	150	Negative
15	Matara	60	Negative	_	_
16	Moneragala	_	_	105	Negative
17	Mullathivu	_	_	135	Negative
18	Polonnaruwa	10	Negative	90	Negative
19	Rathnapura	_	_	180	Negative
20	Vavuniya	33	Negative	90	Negative
21	AQC Katunayaka	242	Negative	625	Negative
22	AQC Maththla	_	_	465	Negative
23	NZG	_	_	3	Negative
	Total	**1478**		**4749**	

***AOC**: Animal Quarantine Center*

***NZG**: National Zoological Garden*

1. No. of serum samples collected	1111
2. No. of dropping samples collected from Hotspots	675
3. No. of cloacal swabs (Backyard) collected	869
4. No. of sample collected from live bird market	270
5. No. of cloacal swabs collected from pet bird Establishment	192
6. No. of samples (Poultry Processing Establishment)	1010
7. No. of Duck serum samples collected	238
8. No. of Duck cloacal swabs collected	237

Active surveillance program against Highly Pathogenic avian Influenza of Sri Lanka, consists with sero-surveillance in commercial poultry and epidemiological surveillance (fresh droppings and cloacal swabs) in migratory birds, live bird market pet birds, poultry processing establishments and backyard poultry farms.

Sample collection is carried out by VIOs, based on the bird population and presence of risk spots in their respective areas. During the third quarter of 2023, total collection of serum samples for ELISA test is 1349 from commercial poultry and duck. The number of fresh droppings and cloacal swabs collected from migratory birds hotspots, backyard poultry, pet bird establishment, ducks farms and live bird market is 3253.

The collected samples are tested in Animal Virology Laboratory of Veterinary Research Institute. Out of 1478 number of serum samples and 4749 fresh droppings and cloacal swab samples which were tested during the third quarter of 2023, none of them were positive for HPAI. According to these surveillance results, it can be accepted as Sri Lanka remains is still remained as a disease free country for Highly Pathogenic Avian Influenza in both domestic and wild avian populations.

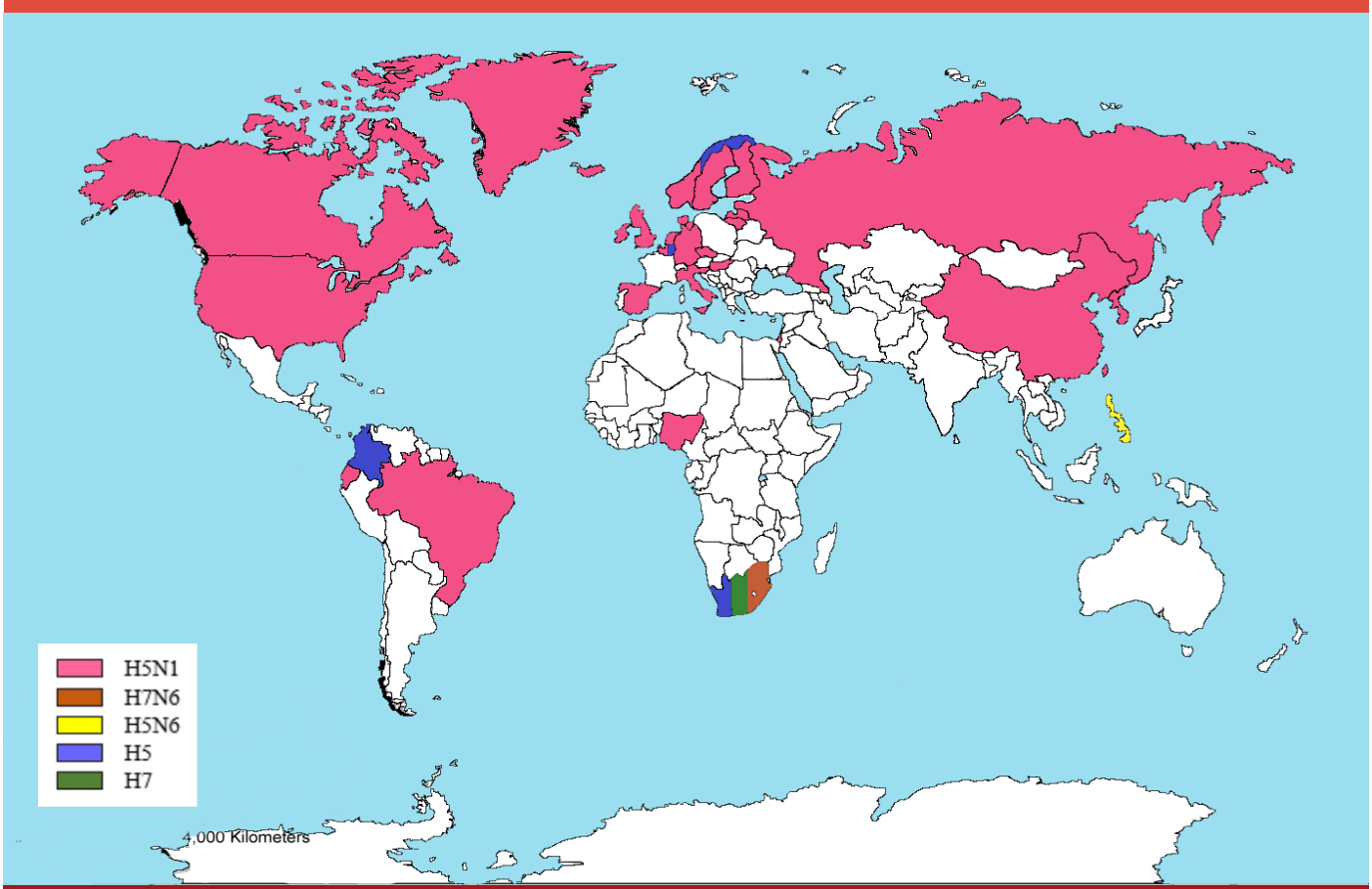
3.4.2 Global Distribution of Notifiable Avian Influenza:

Avian influenza (AI) is a highly contagious viral disease that can affect to both domestic and wild birds as well as other mammalian species. This complex disease is caused by viruses divided into multiple subtypes (i.e. H5N1, H5N3, H5N8, H7N6 etc.) whose genetic characteristics rapidly evolve. The disease occurs worldwide, but different subtypes are more prevalent in certain regions than others.

According to the Global Situation Update Reports of WOAH, during the third quarter of 2023, 56 outbreaks were reported in poultry sector from 18 countries and 297 outbreaks were reported in non-poultry sector from 49 countries in the world. 4 Avian Influenza infected mammalian (unusual host) cases were also reported during the period. However, H5N1 is the most prominent subtype in the world among susceptible hosts during the third quarter of 2023.

In poultry sector H7, H5N6, H5 and H7N6 were reported apart from H5N1. In non-poultry sector, only H5 sub-type was reported apart from H7N6. H5N1 is the only reported subtype from unusual mammalian hosts. Avian Influenza infected cats from Poland, Red foxes from Sweden, South American fur seal and South American sea lions from Uruguay and Harbor seal from Denmark were reported during the period.

3.4.3 Global Situation of Notifiable Avian Influenza outbreaks:



Compiled by: Janani Kularathna, Livestock Development Officer.

Editor:
Dr. D.R.K.Perera
Veterinary Surgeon Animal Health
Dept. of Animal Production and Health,
P.Box 13,Getambe, Peradeniya
e-mail: roshaniperera1919@gmail.com

Guided By:
Dr. D. Kumarasinghe
Veterinary Surgeon Animal Health
Dept. of Animal Production and Health,
P.Box 13,Getambe, Peradeniya
e-mail: dhammikakumarasinghe@yahoo.com

Advised by:
Dr. G.G.I.A. Jayawickrama
Chief Epidemiologist Animal Health
Dept. of Animal Production and Health,
P.ox 13,Getambe, Peradeniya
e-mail: jayawickrama64@yahoo.com
TP:0812384551