



ROYAL GOVERNMENT OF BHUTAN
Department of Livestock
NATIONAL CENTRE FOR ANIMAL HEALTH



Ministry of Agriculture and Livestock

"Sustainable food system and natural resources for the equitable social and economic well-being"

LUMPY SKIN DISEASE

Outbreak, Response and way forward

National Centre for Animal Health





Presentation outline



Overview of LSD Outbreak



Vaccination Strategy



Implementation and Progress



Way forward





Data sources

LSD Inventory_NCAH

Sl. No	Dzongkhag Name	No. of Animals on Farm: Young (<1yr)	No. of Animals on Farm: Adult (>1yr)	Start Date	Last Date	Total Livestock: Young (<1yr)
1	Bumthang	58	382	8-Jul-2023	18-Aug-2023	440
2	Chhukha	429	1,199	5-Mar-2023	17-Aug-2023	1628
3	Dagana	584	608	5-Mar-2023	21-Aug-2023	1192
4	Gasa	535	307	28-Jul-2023	18-Aug-2023	842
5	Ha	579	2,033	1-Mar-2023	5-Sep-2023	2612
6	Lhuentse	432	1,080	7-Jun-2023	7-Sep-2023	1512
7	Monggar	1,159	1,074	1-May-2023	9-Sep-2023	2233
8	Paro	891	1,769	7-May-2023	8-Sep-2023	2660
9	Pheni/Gathol	378	884	23-Apr-2023	7-Sep-2023	1262
10	Pyuthang	479	1,894	8-May-2023	7-Sep-2023	2373
11	Sandrup/Jongkhar	351	791	7-Apr-2023	5-Aug-2023	1142
12	Santa	652	1,714	3-Jun-2023	4-Sep-2023	2366
13	Samtse	589	958	7-Jun-2023	3-Jan-2024	1547
14	Thimphu	1,118	1,038	7-Jun-2023	9-Sep-2023	2156
15	Thimphu	714	2,100	4-May-2023	8-Sep-2023	2814
16	Tsukhi/Tengbo	227	791	8-Jul-2023	12-Aug-2023	1018
17	Trongsa	534	1,435	8-Jun-2023	8-Sep-2023	1969
18	Tsingi	343	1,403	1-May-2023	12-Aug-2023	1746
19	Wangdue Phodrang	774	2,382	1-May-2023	12-Aug-2023	3156
20	Zhemgang	311	444	7-Apr-2023	8-Sep-2023	755
21	Total/ Average	15,888	35,863			51,751



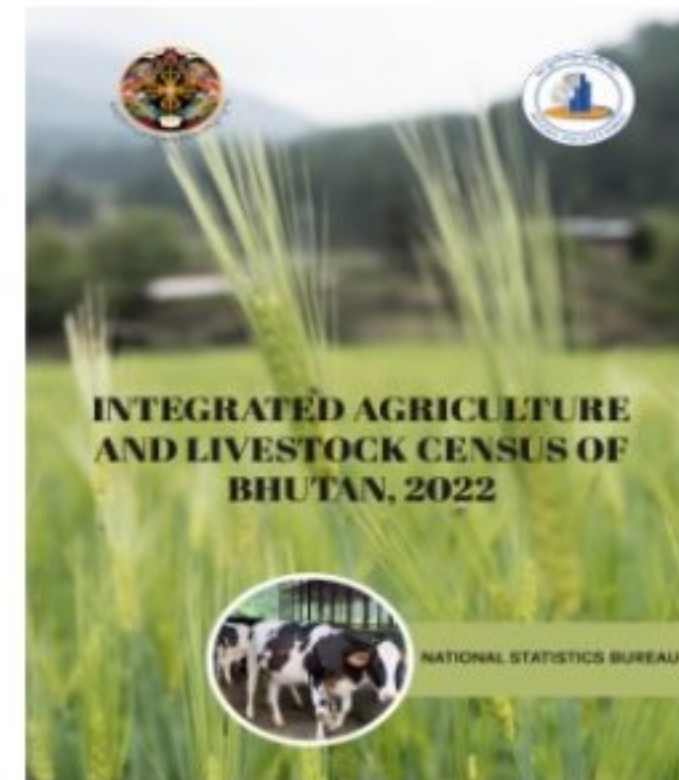
LSD VACCINATION_BHUTAN_2023

Database for recording information
regarding mass vaccination of bovines

Role: VIEWER

Created: 19 Aug 2023

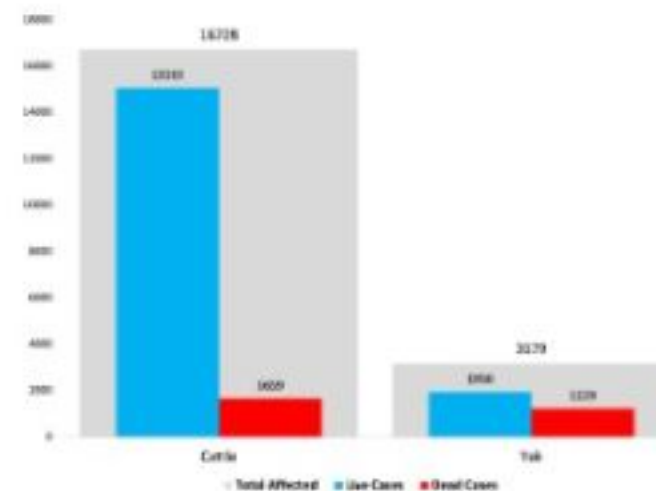
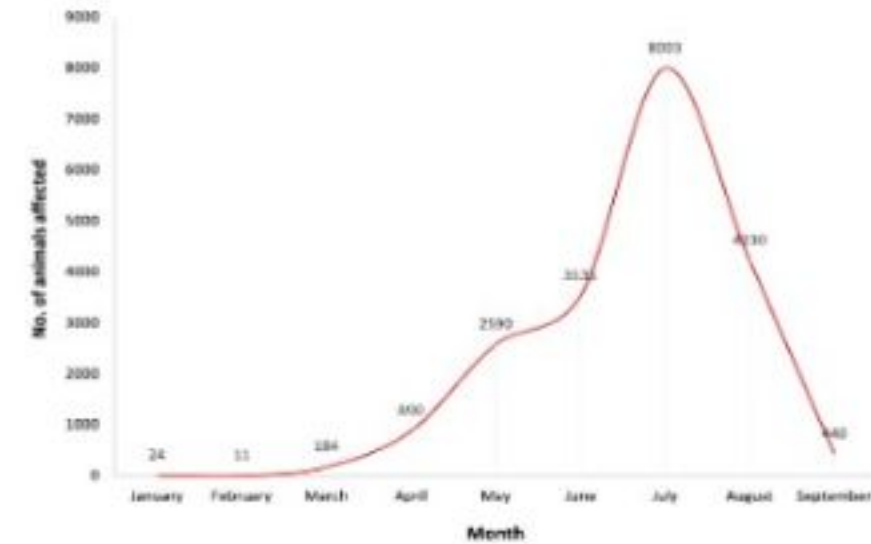
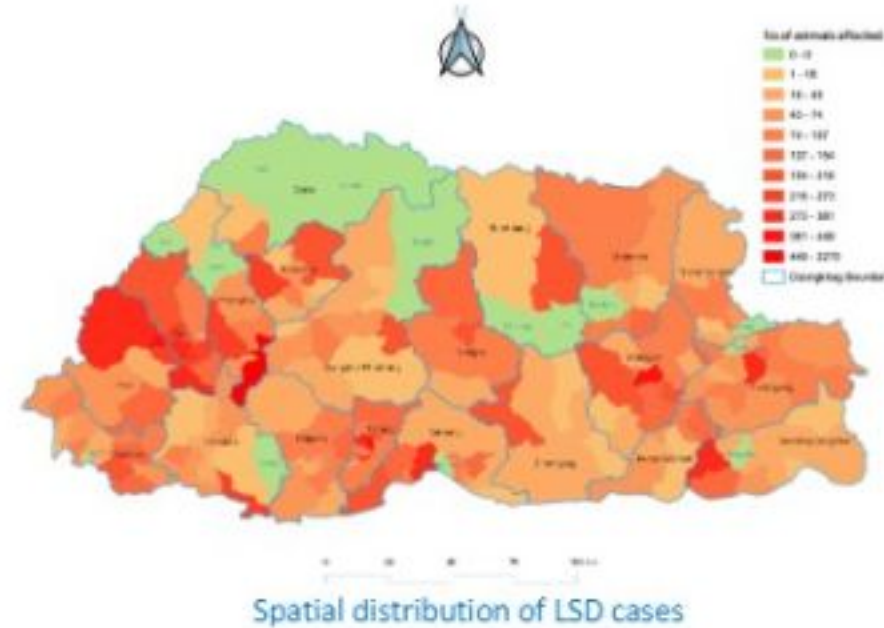
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Outbreak Overview – 2023

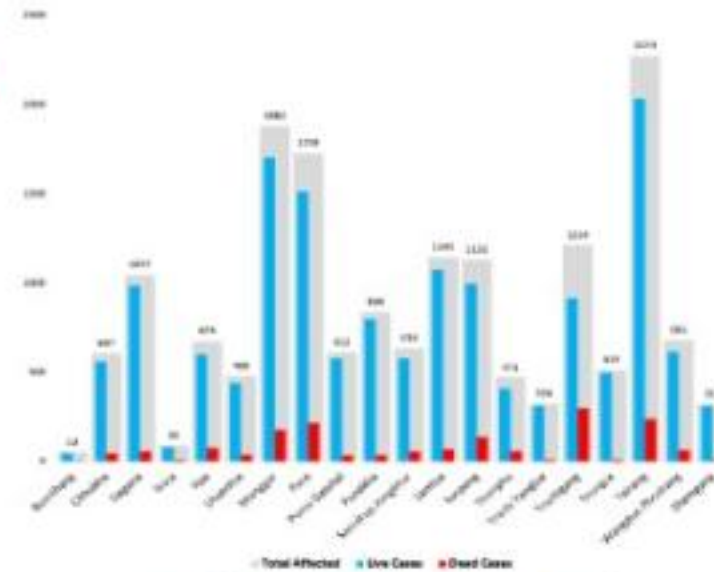
- 7,815 households affected in 20 Dzongkhags and 192 Gewogs
- 19,907 affected: 16,728 cattle and 3,179 yaks
- 2,888 died: 1,659 cattle and 1,229 yaks
- CFR: 9.92% in cattle and 38.66% in yaks
- 1st case reported on 2nd January in Samtse and the last case in Thimphu on 19 September



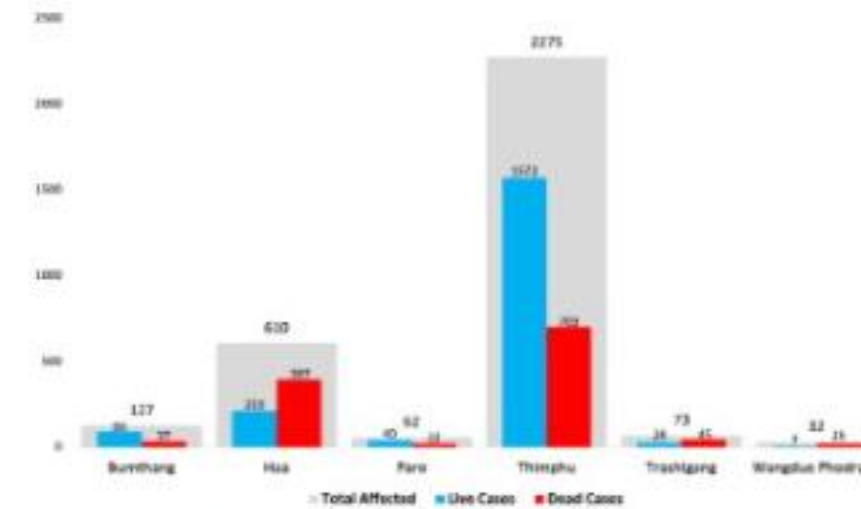


Outbreak Overview – 2023...

- LSD in cattle: Highest in Tsirang, followed by Monggar, Paro, Trashigang....
- LSD in yaks: 6 Gewogs in 6 highland Dzongkhags affected. Thimphu reported the highest no. of cases, followed by Haa, Bumthang, Trashigang....
- 1,229 yaks died of LSD: highest in Dakarla, followed by Bji, Kar-tshog, Uesu...
- Adult yaks were the mostly affected age group (live and dead cases)



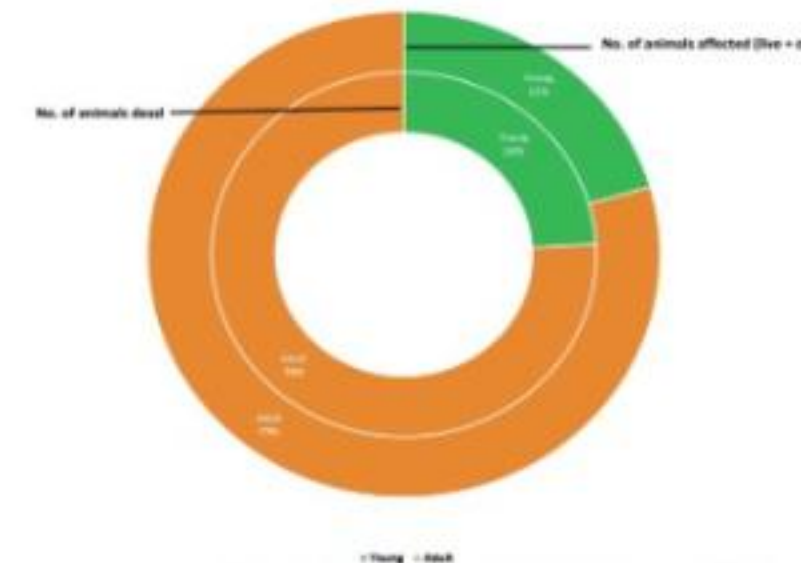
Dzongkhag-specific LSD cases in cattle



Dzongkhag-specific LSD cases in yaks



Dzongkhag-specific LSD cases in yaks



Overall LSD cases, by age group





Vaccination: the KEY STRATEGY

- Mass vaccination using homologous vaccine (Neethling strain)
- Target animal types: CATTLE, YAK, MITHUN and BUFFALO
- Targeted Coverage: 100% (at least 80%)
- Ineligible groups:
 - Calves below one month of age
 - Animals currently infected or showing clinical signs and symptoms of LSD
 - Clinically sick animals due to any other disease(s)



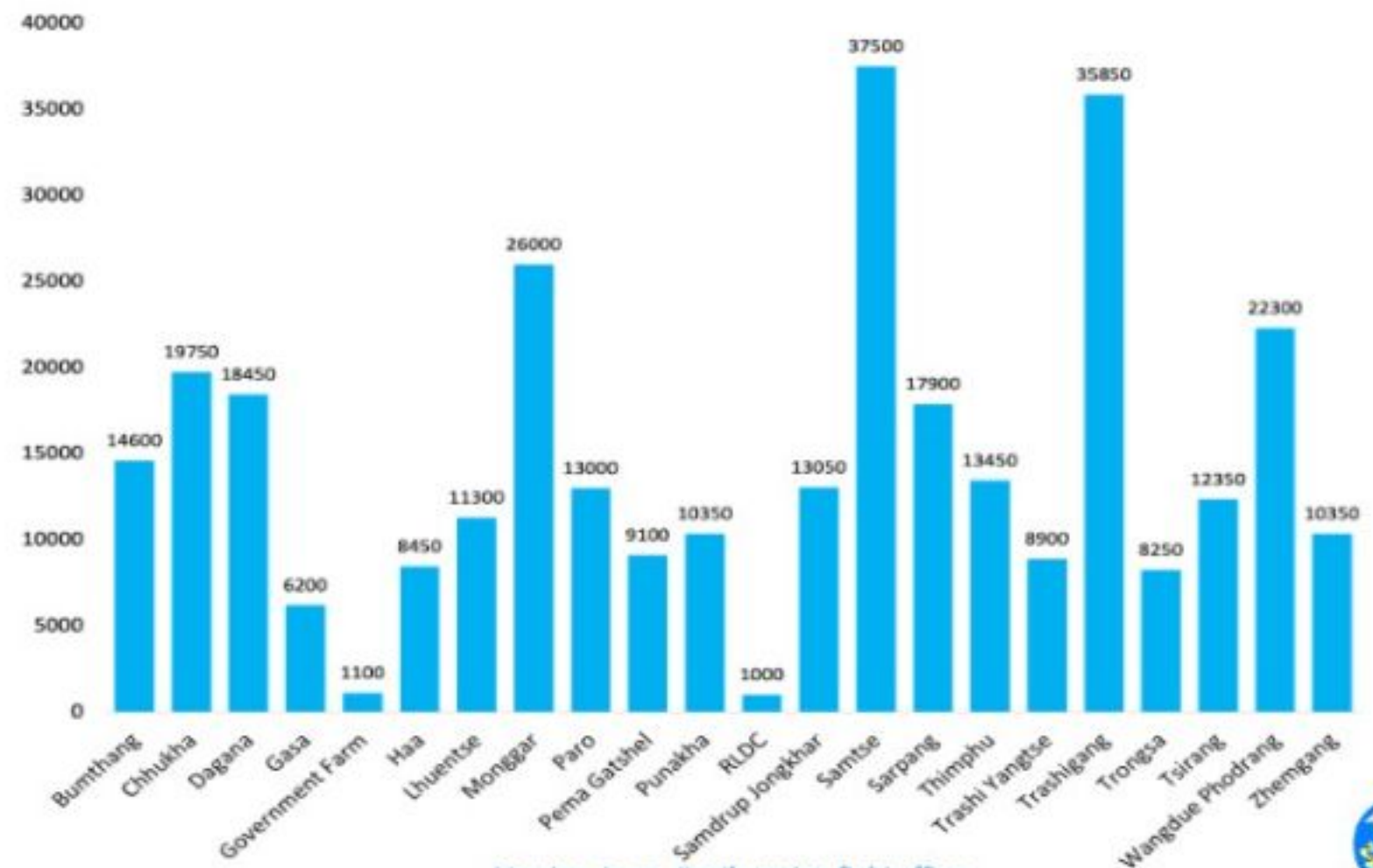
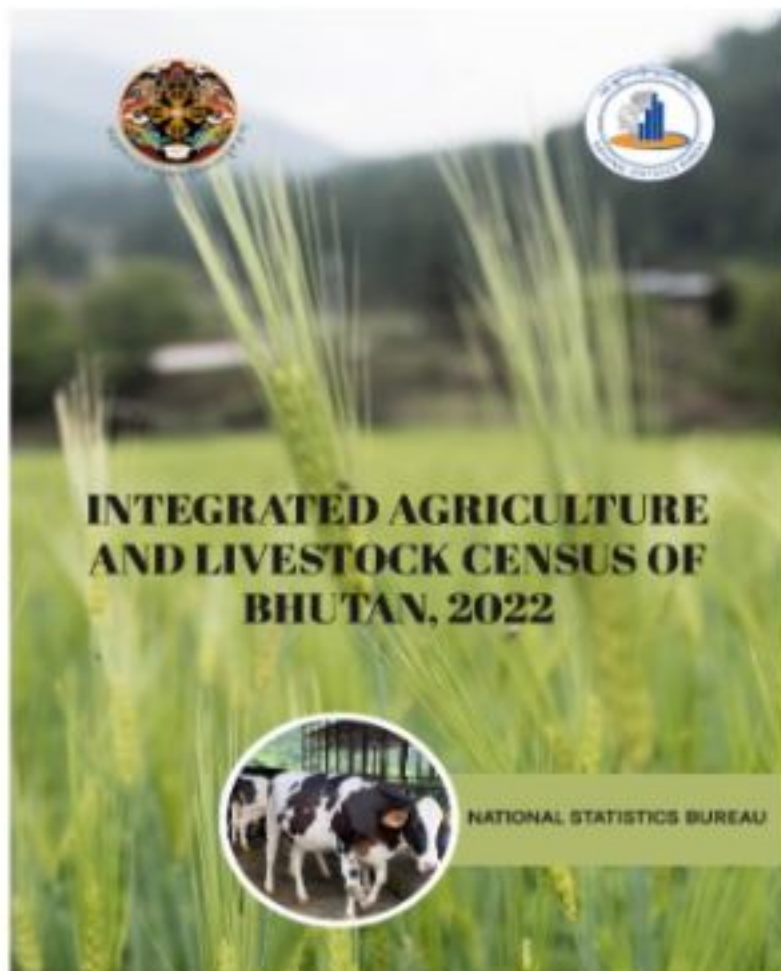
Parameter	Description/ Value
Name of the product	LUMPYVAC®, (Lumpy Skin Disease Virus Vaccine)
Pharmaceutical Form	Attenuated live vaccine in lyophilized form
Volume for 1 dose	2 ml
Quantitative Composition	Neethling virus strain, not less than 10^4 TCID ₅₀ / dose Lactalbumin hydrolysate: 0.25 mg Sucrose: 0.50 mg
Presentation	50 doses per vial
Storage temperature	+2 to +8°C
Recommended dose per animal	2ml
Duration of immunity	At least 1 year
Shelf life	24 months





Vaccine Doses

- Based on the total bovine population (IALC, 2022), vaccine dose requirements were calculated and distributed to the respective field offices.
- 319,200 doses were distributed

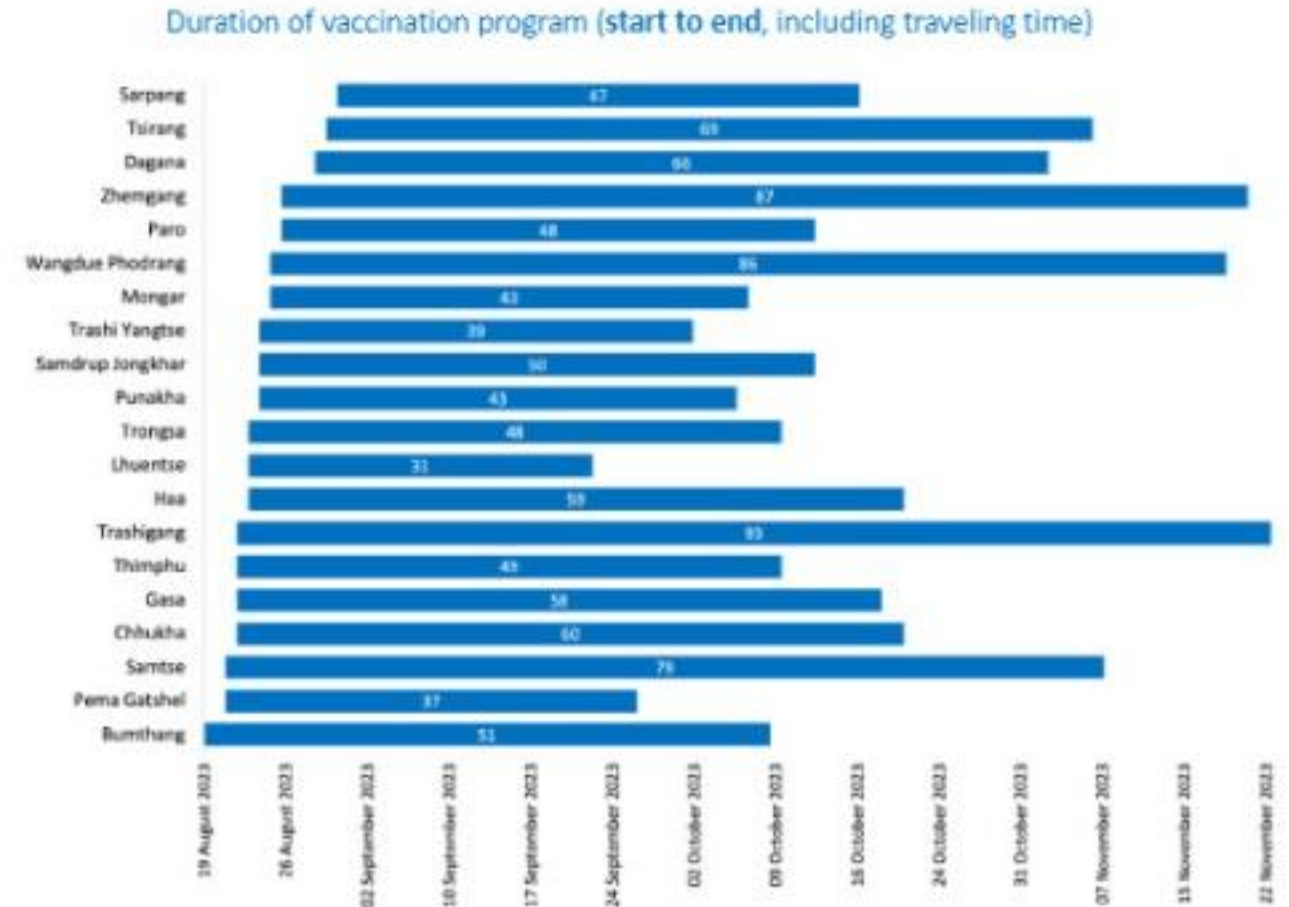
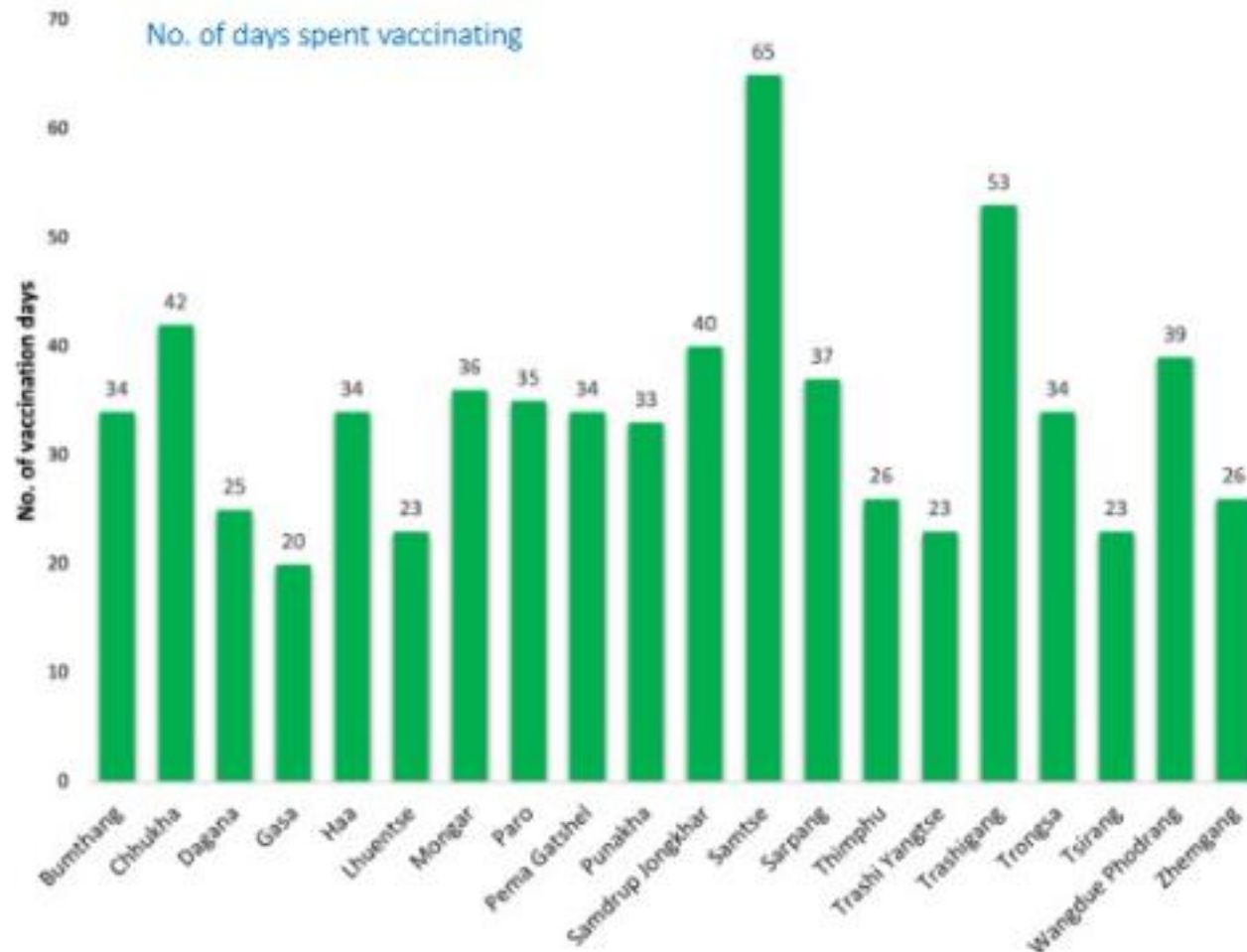


Vaccine doses distributed to field offices





Vaccination Duration

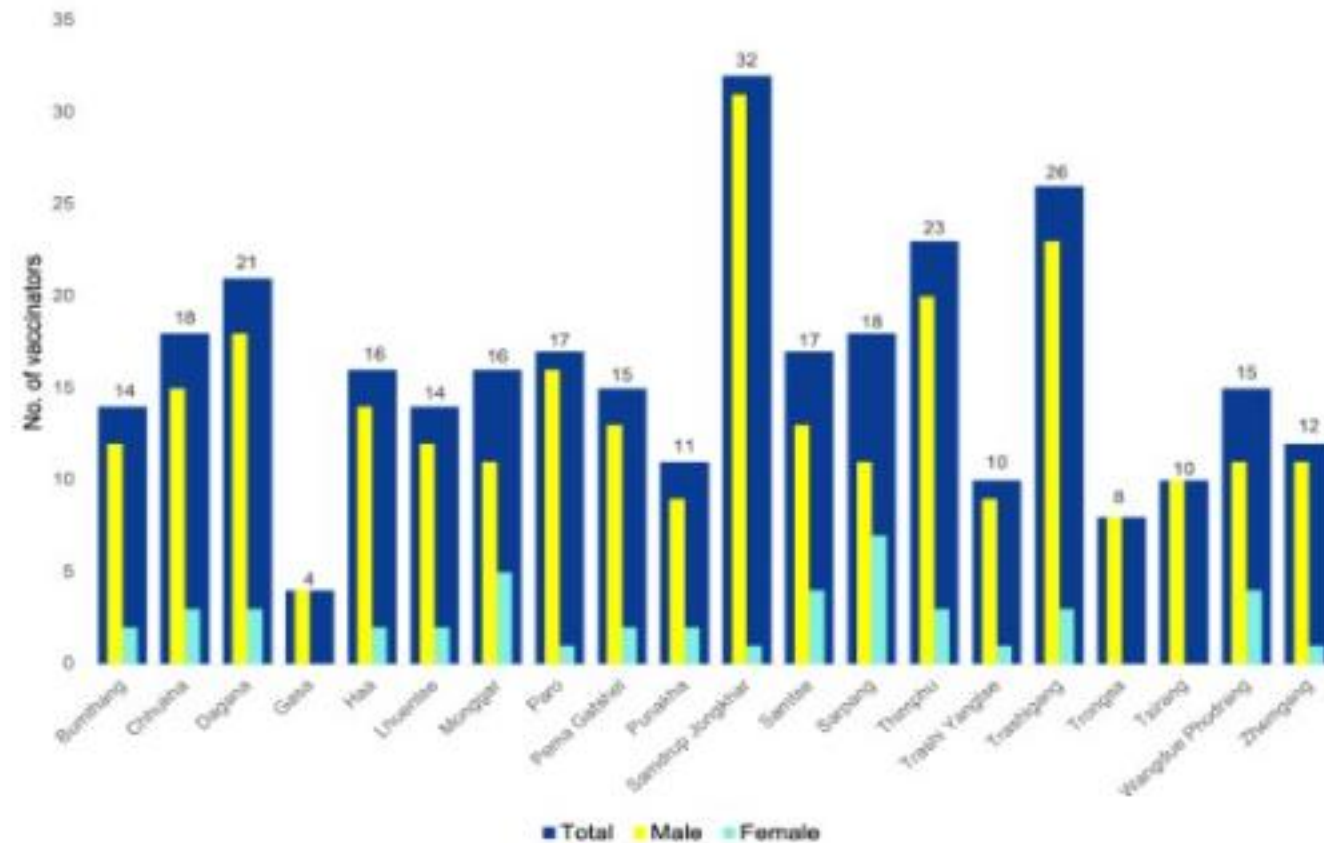


- Vaccination started on 19 Aug 2023 from Bumthang (NCBC) and ended on 22 Nov 2023 in Trashigang.
- Average duration of the program (including travel days) in each Dzongkhag = 57 days.
- Average vaccination duration (excluding travel days) = 34 days.

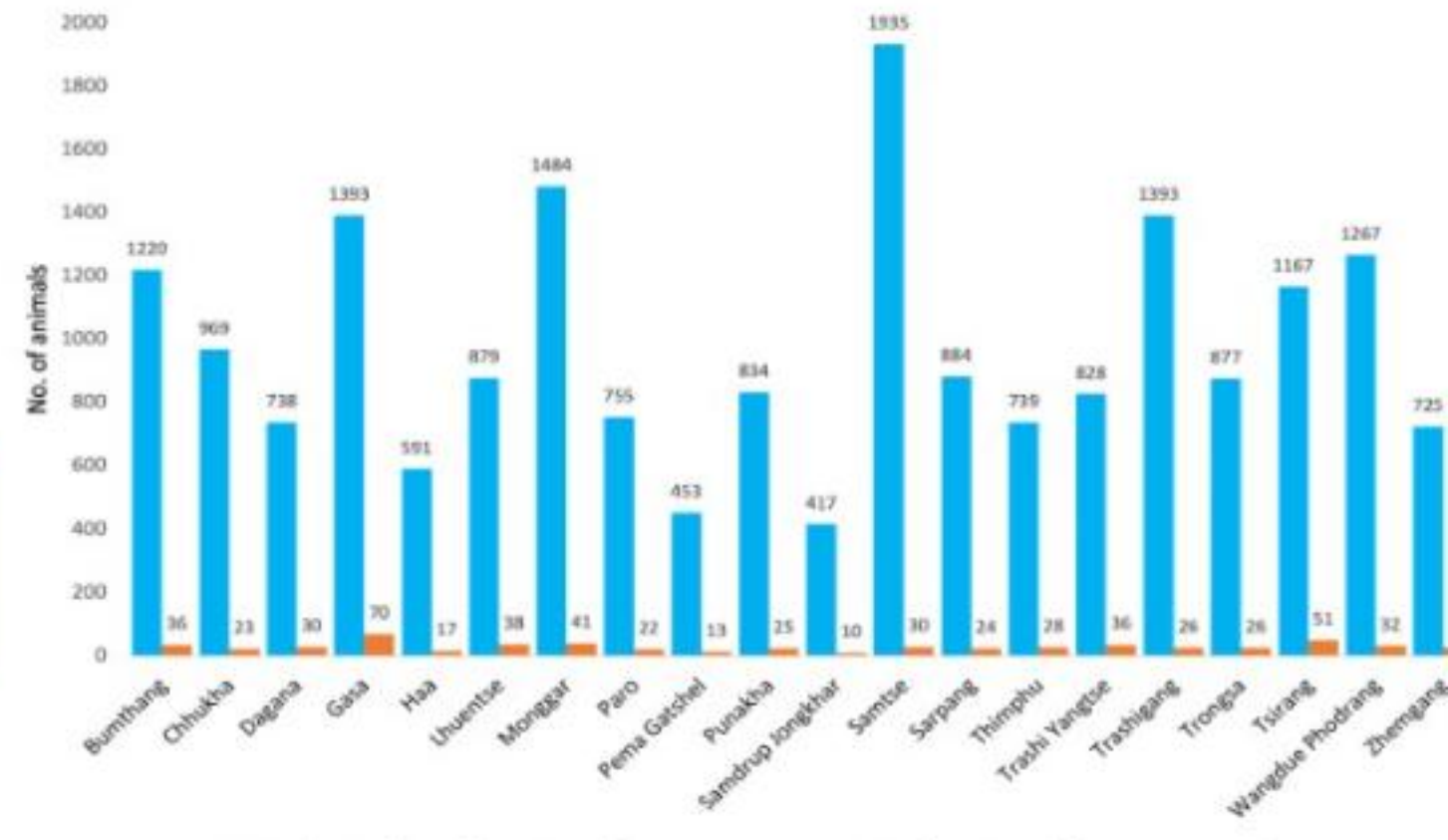




Human Resource



No. of vaccinators involved



Total no. of animals vaccinated by a person Animals vaccinated by a person per day

Per person vaccination progress

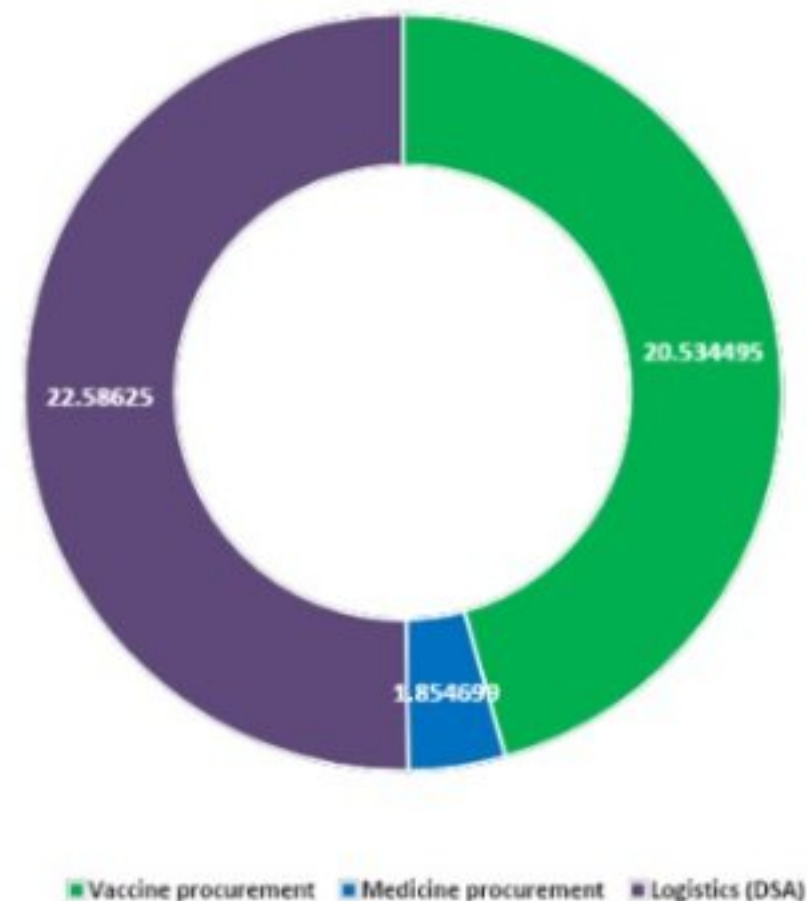
- 317 vaccinators were involved: 217 male and 46 female
- Average no. of animals vaccinated by a person during the entire program = 977
- Average no. of animals vaccinated by a person per day = 30





Budget

- Estimated budget (vaccine, medicines, DSA): **Nu. 44.97 Million**
- Medicines distributed for necessary treatment during the outbreak period.
- DSA estimated based on the number of vaccinators engaged and days spent (including travelling) – actual logistics cost is expected to be higher because mobility or travelling expenses were not included.

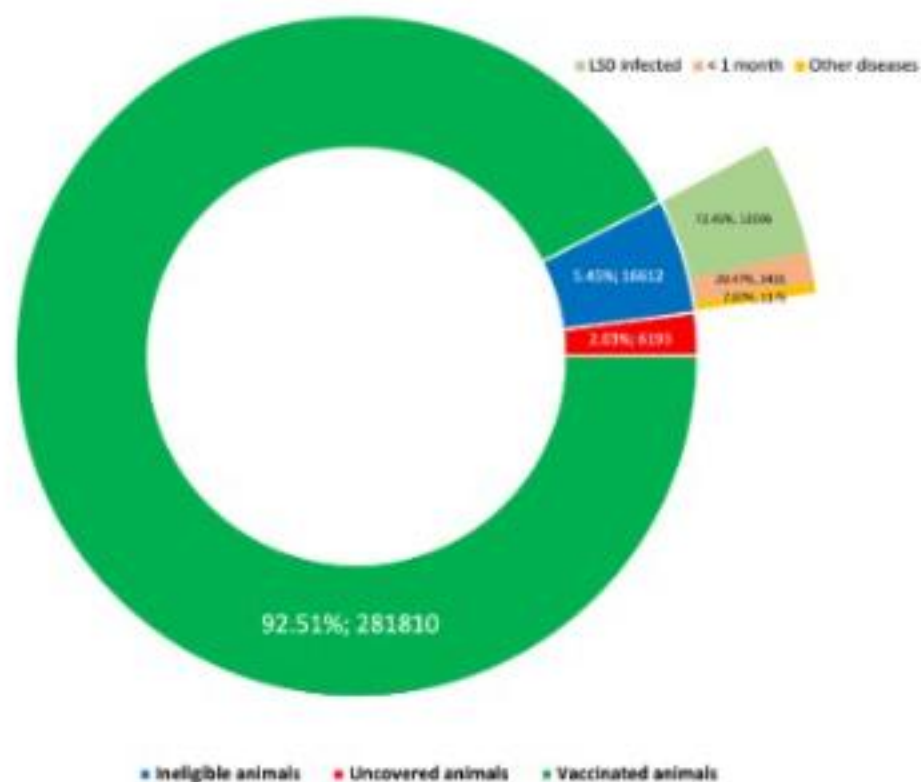


Estimated Financial Expenditure



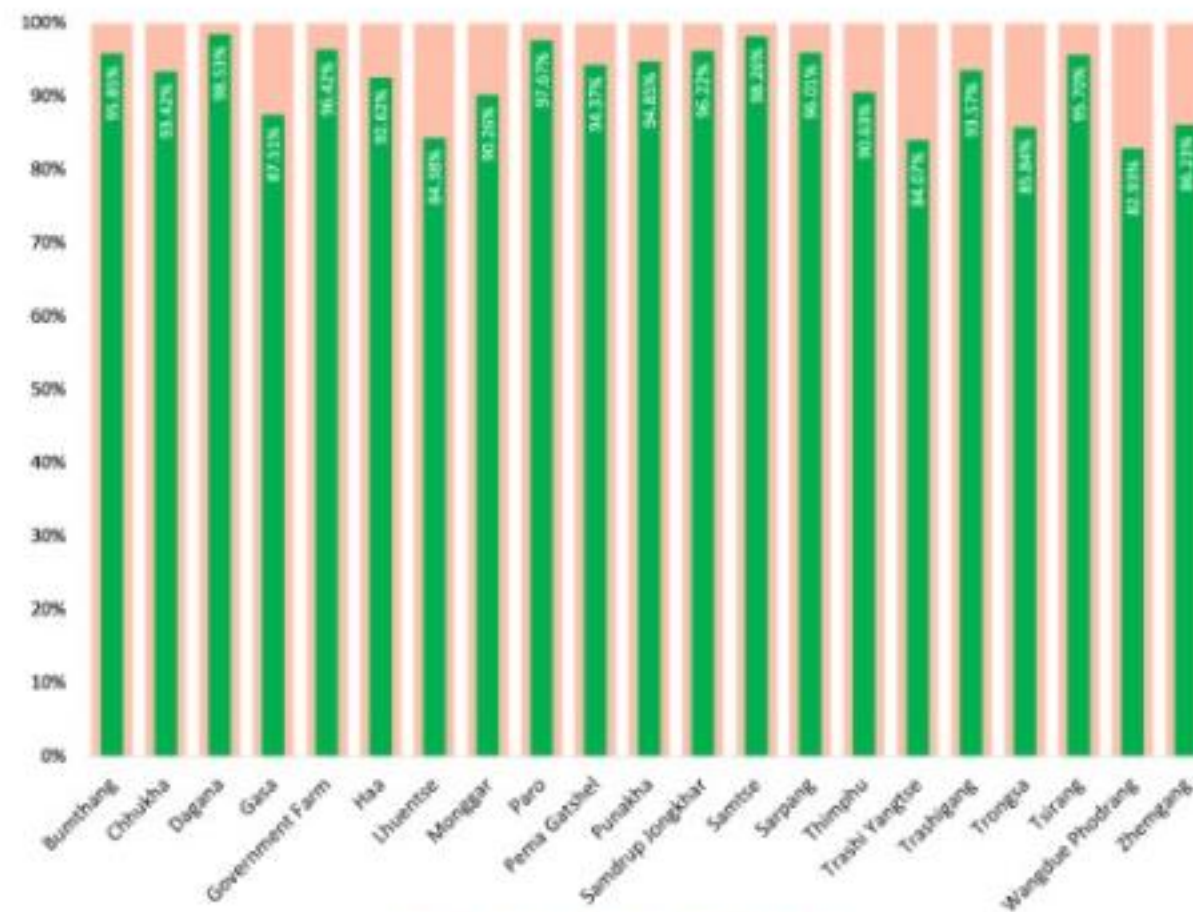
Vaccination Progress

- Total bovine population (including the missed ones): **304,615**
- Ineligible population (exclusion criteria): **16,612**
- Missed due to various reasons: **6,193**
- Average COVERAGE: **92.51 %**



Coverage = no. of animals vaccinated / Total bovine population

Where total bovine population = no. of cattle, yaks, mithuns and buffaloes counted, including vaccinated, ineligible for vaccination and missed out.

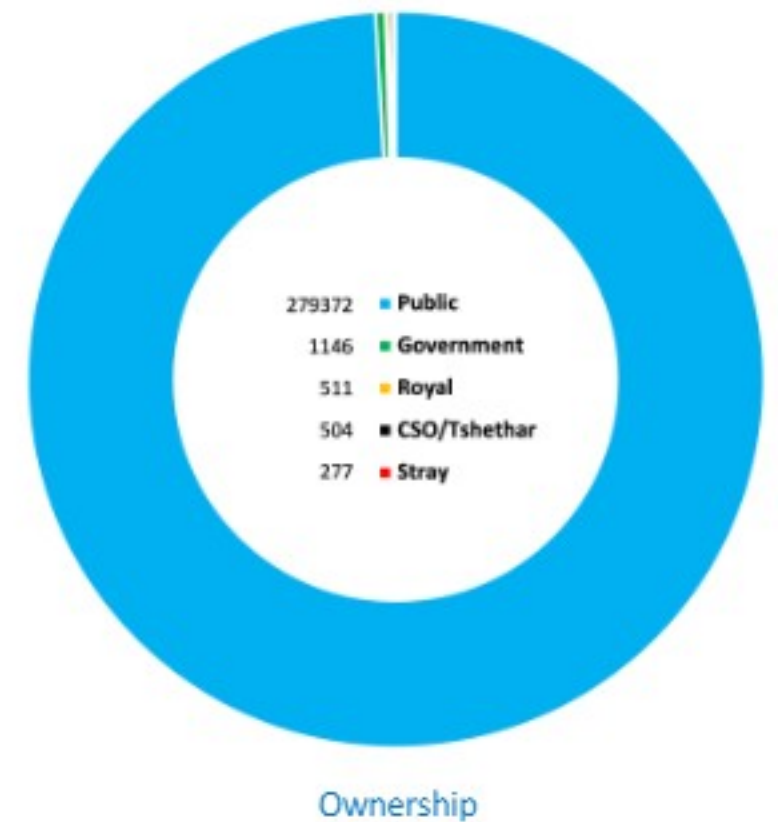
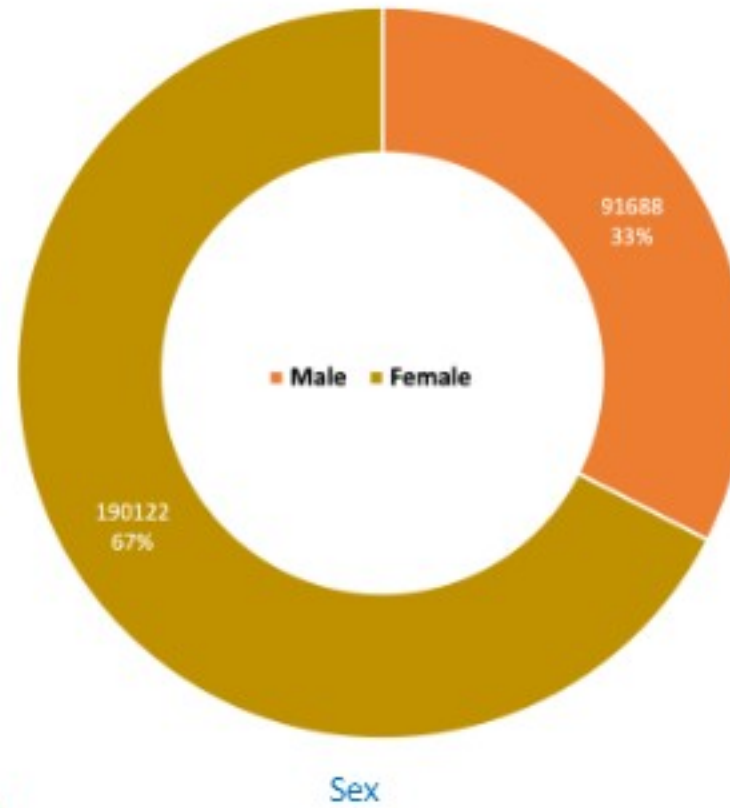
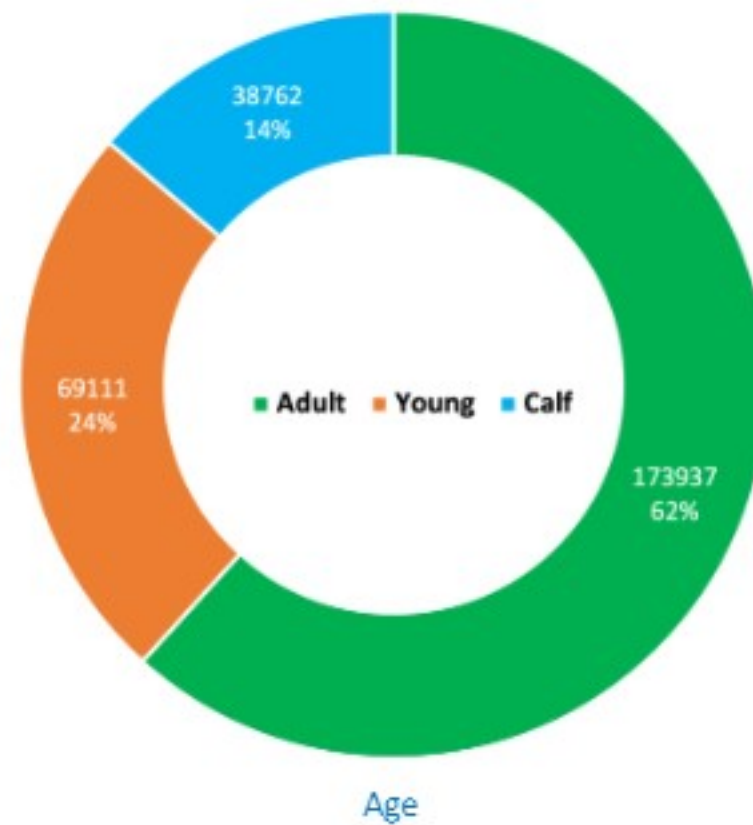
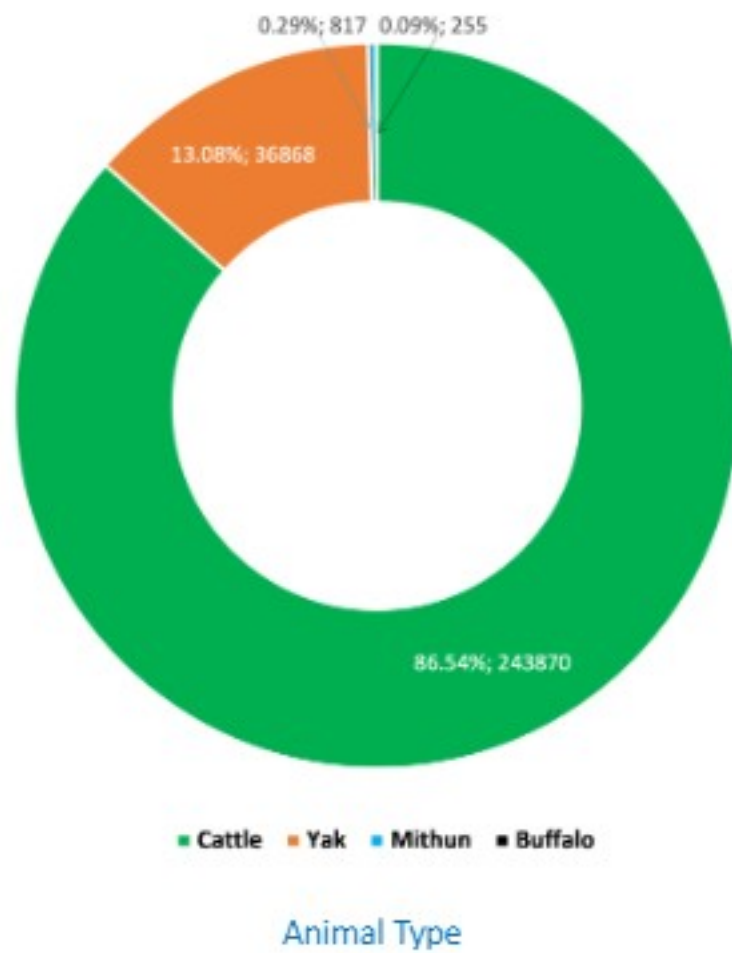


Dzongkhag-specific LSD coverage





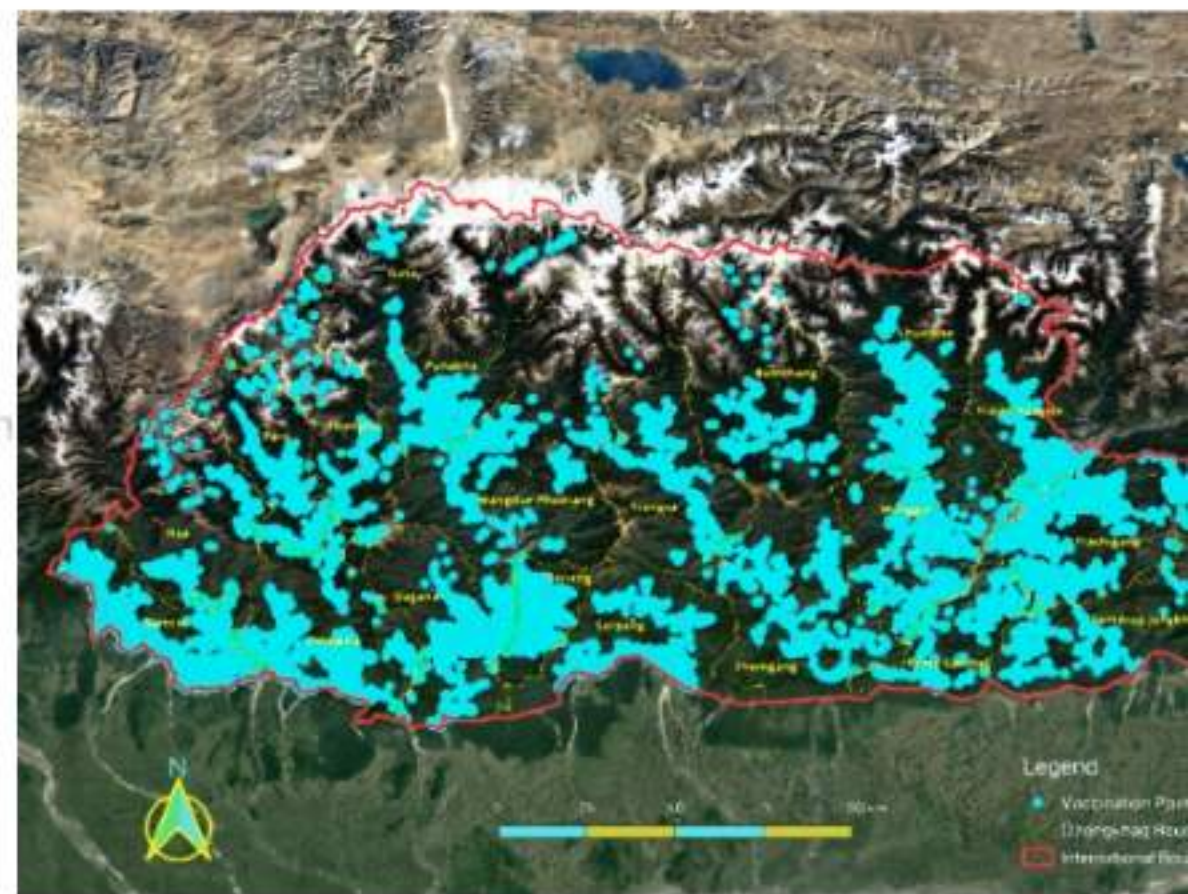
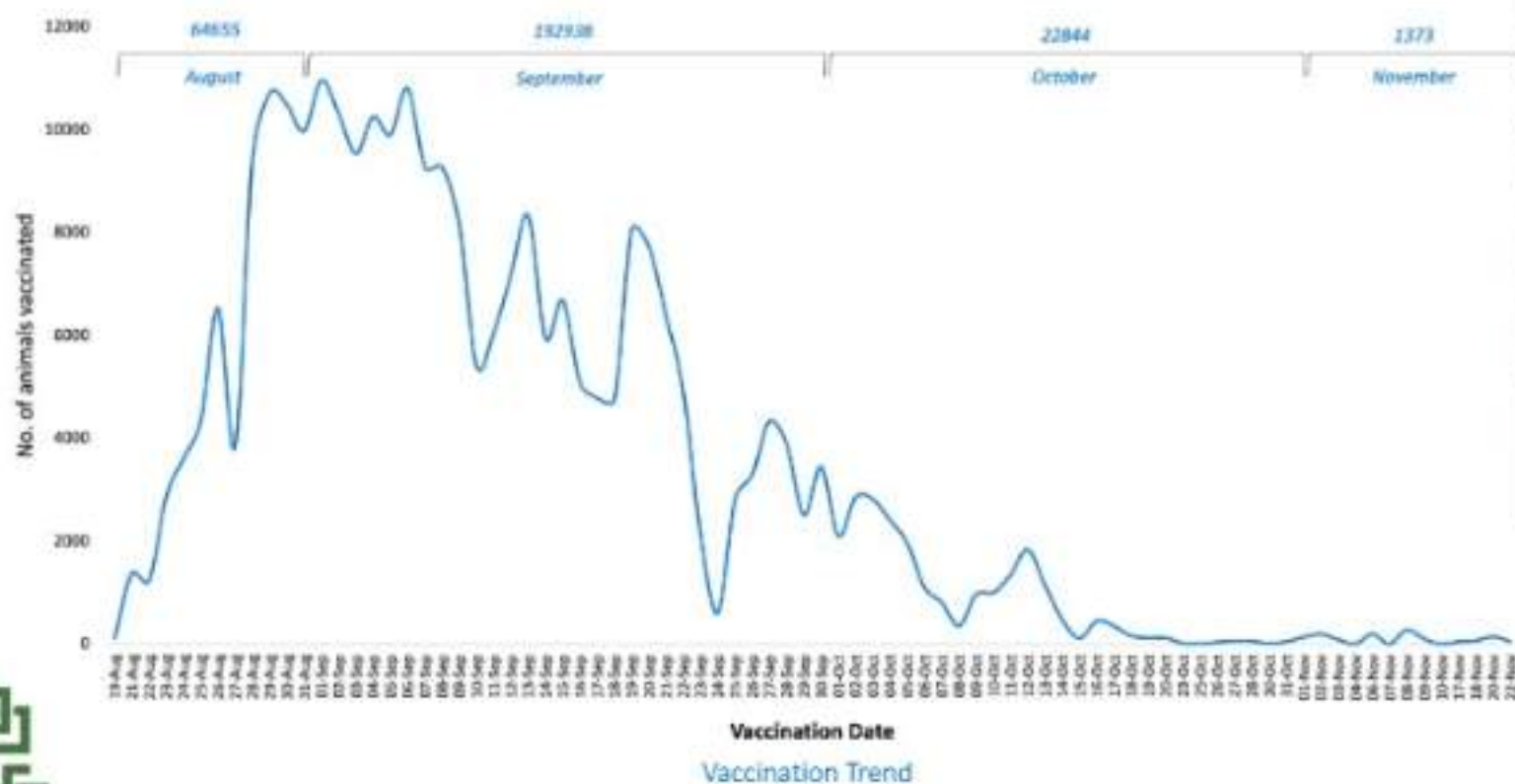
Vaccination Progress...





Vaccination Progress...

- The entire vaccination program took 95 days to complete, however, an impressive 91% of the total eligible population were vaccinated within the first 40 days of the campaign.

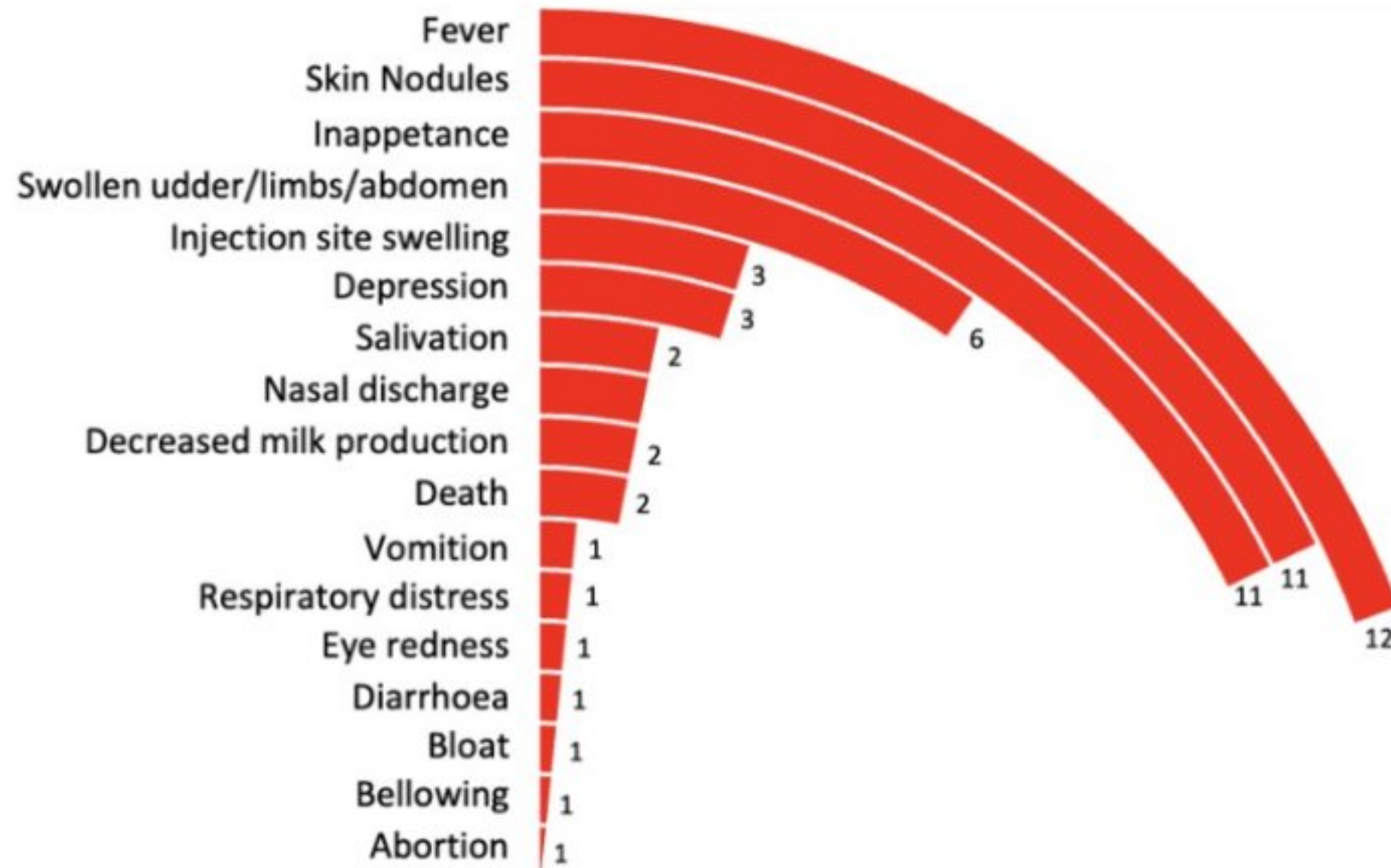


Vaccination Points (location)





Adverse Effect Following Immunization



- 62 animals (AEFI = 0.02%) from 281,810 were reported with some reactions following vaccination against LSD





Common reasons for leaving out eligible animals unvaccinated

As per the post-vaccination survey conducted, reasons for leaving out (n = 6,193):

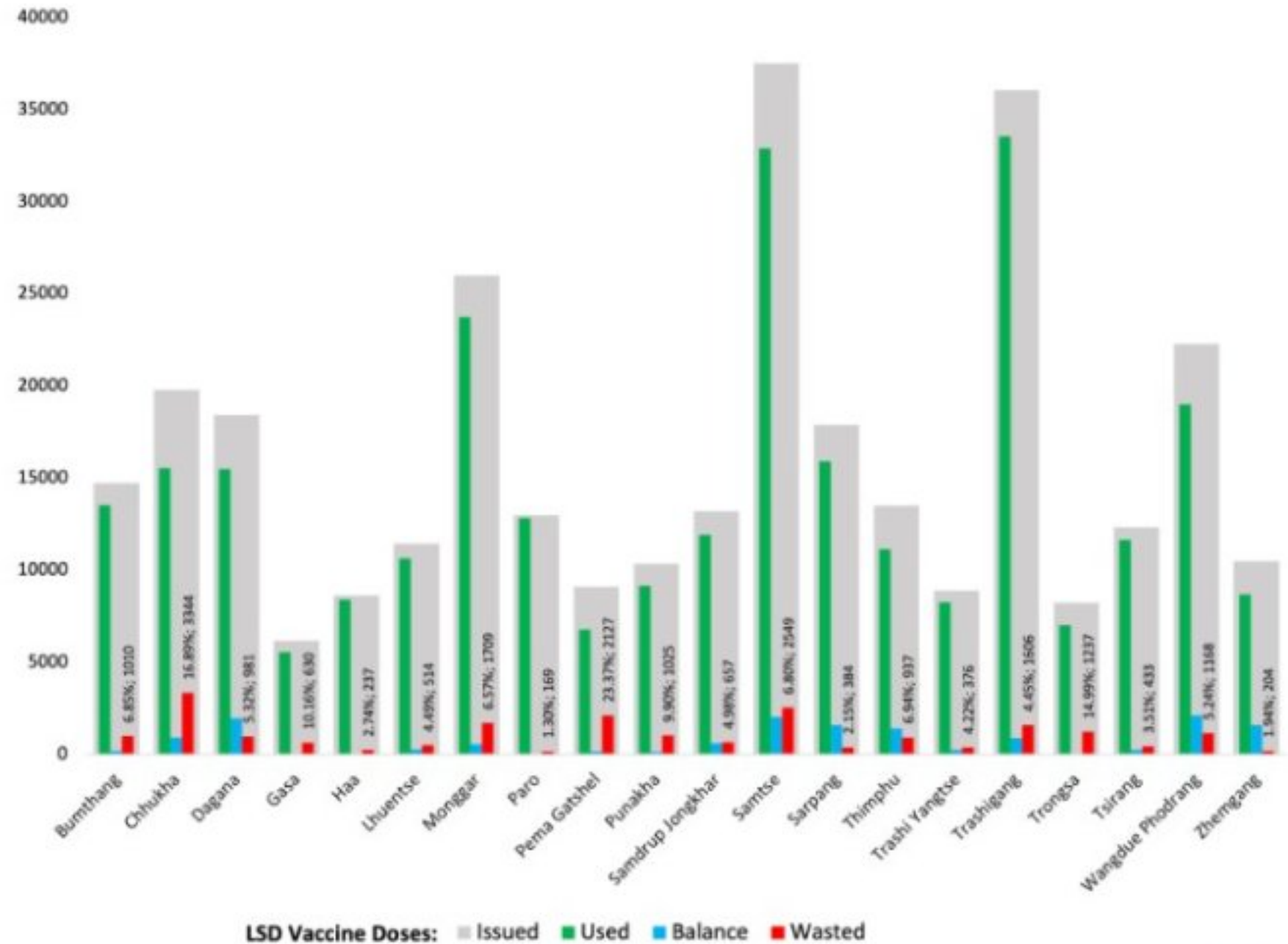
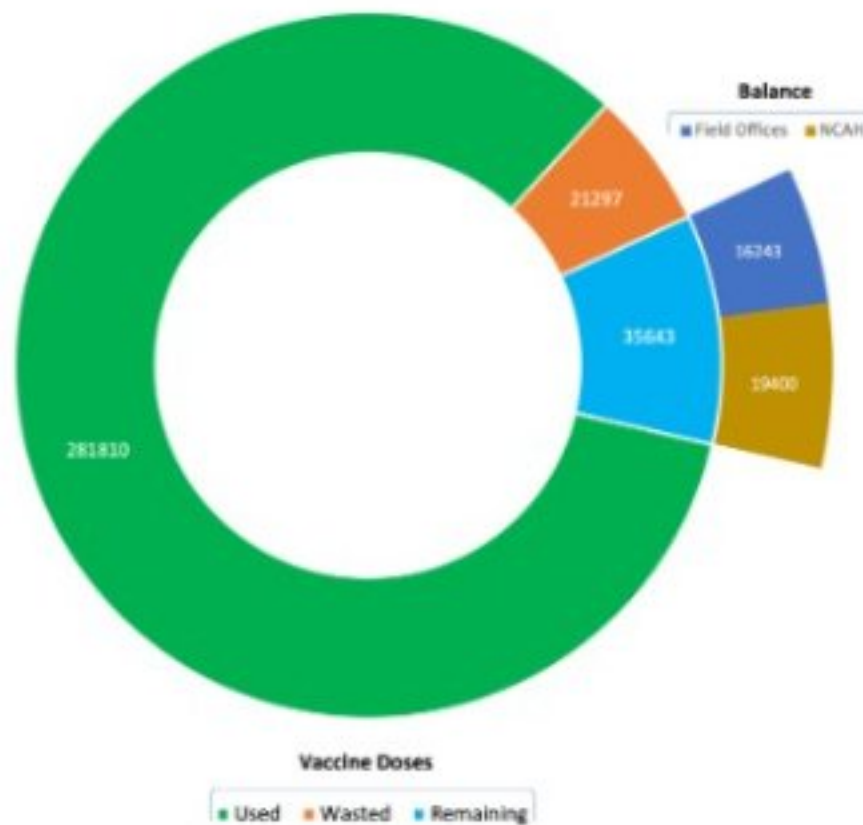
- Vaccinators not able to locate the tshethar animals
- Owners reluctant to vaccinate
- Vaccinators not able to locate migratory herds due to their frequent movement
- Herds inaccessible due to road blocks and swollen rivers and streams
- Owners intentionally sending their animals away for free grazing to avoid vaccination





Vaccine Usage

- As per the post-vaccination data collected, 21,297 (6.69%) doses of vaccines were wasted due to spillage or disposal of incompletely used vials.





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**Alone we can do so little; together we
can do so much – Helen Keller**





Lumpy Skin Disease and the way forward

Strategy

- Continue vaccinating
- Three years
- Homologous vaccine
- High vaccination coverage (100% in the high-risk areas and 75% in low risk areas)

Rationale

- LSD is a serious disease and vaccination works
- Regional situation
- Heterologous vaccine efficacy is very low
- Herd immunity
- Limited resources
- Other competing priorities





Vaccination: the KEY STRATEGY

- Target animal types: CATTLE, YAK, MITHUN and BUFFALO
- Targeted Coverage: 100% and 75%
- Mandatory vaccination of migratory animals
- Ineligible groups:
 - Calves below one month of age
 - Animals currently infected or showing clinical signs and symptoms of LSD
 - Clinically sick animals due to any other disease(s)



7/23/24

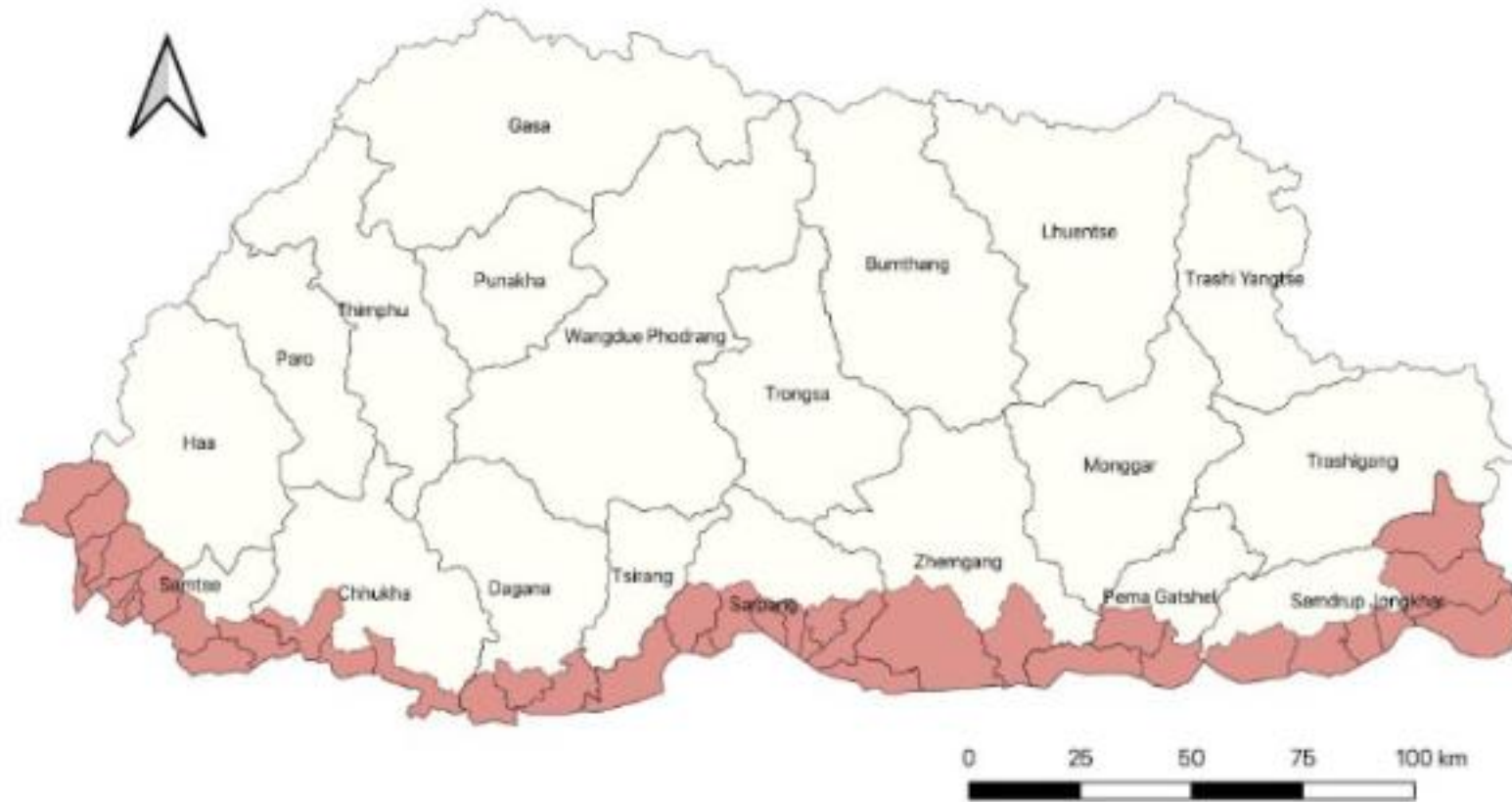


Parameter	Description/ Value
Name of the product	LUMPYVAC®, (Lumpy Skin Disease Virus Vaccine)
Pharmaceutical Form	Attenuated live vaccine in lyophilized form
Volume for 1 dose	2 ml
Quantitative Composition	Neethling virus strain, not less than 10^4 TCID ₅₀ / dose Lactalbumin hydrolysate: 0.25 mg Sucrose: 0.50 mg
Presentation	50 doses & 25dose per vial
Storage temperature	+2 to +8°C
Recommended dose per animal	2ml
Duration of immunity	At least 1 year
Shelf life	24 months





Vaccination: the KEY STRATEGY



Sl.No	Dzongkhag	Geog
1	Chukha	Sampheling, Phuentshogling, Darla
2	Dagana	Nichula, Lhamoizingkha, Karmaling
3	Pema Gatshel	Norboogang, Dechhenling, Chhoekhorling
4	Samdrup Jongkhar	Serthig, Samrang, Phuentshogthang, Pemathang, Lauri, Langchenphu, Dewathang
5	Samtse	Yoseltse, Ugyentse, Tendruk, Tashicholing, Tading, Sangagcholing, Samtse, Phuentshogpelri, pemaling, Norgaygang, Norbugang, namgaycholing
6	Sarpang	Umling, Tareythang, Shompangkha, Serzhong, Senggey, Samteling, Gelegphu, Gakiling, Dekiling, Chhuzangang
7	Zhemgang	Pangkhar, Ngangla

Based on the assessment of risk on the ground considering the proximity to high-risk areas, climatic conditions and fly activities, the area specific coverage can vary but the overall coverage should sum up to 75%.





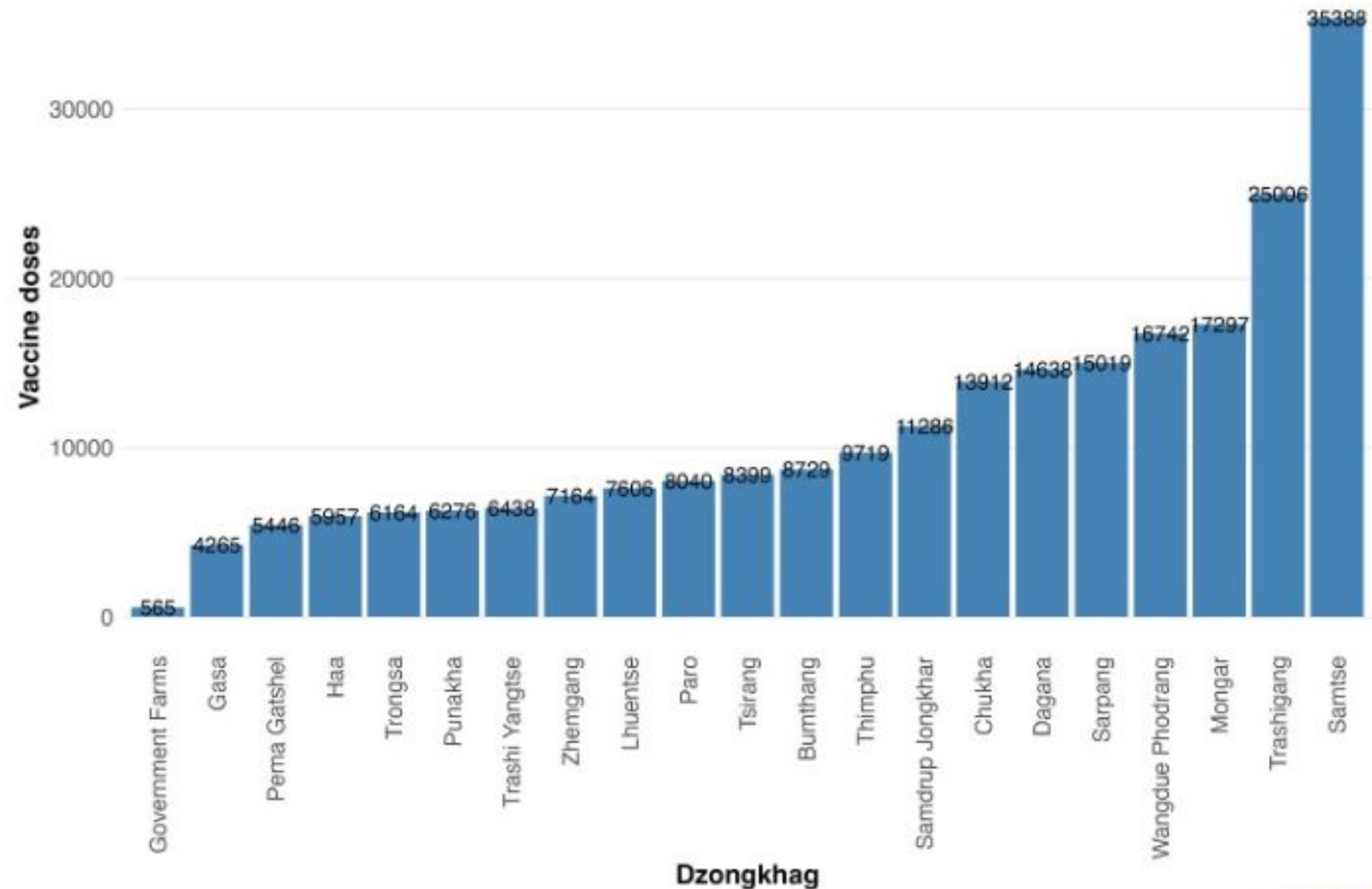
Vaccination: vaccine quantity

IALC data - 2022

Sl.No	Particulars	Values
1	Total doses in 100% geogs	59,788
2	Total doses in 75% geogs	174,265
3	Total doses required	234,053
4	20% buffer (inclusive of handling loss)	46810.55
Total doses to be procured		280,863

Sl.No	Particulars	Values (USD)
1	Cost for vaccine	200141.25
2	Cost for transshipment	7213.49
3	Total cost	207,354.74

Vaccine Doses by Dzongkhag





Strategy, guidelines and SOPs



The screenshot shows the homepage of the National Centre for Animal Health (NCAH) website. The header features the Bhutanese text "ཀུལ་ཡོངས་སློན་ཁྲིམས་པའི་སྡེ་བ" and the English text "NATIONAL CENTRE for ANIMAL HEALTH" and "Department of Livestock, Ministry of Agriculture and Livestock". The navigation bar includes links: HOME, ABOUT US, UNITS, DOWNLOADS, PROGRAMS, SYS-APPS, NCAH, GALLERY, CONTACT US, FAQs, and SITEMAP. The "DOWNLOADS" menu is expanded, showing a list of documents. The "LSD VACCINATION PROGRAM 2023" is highlighted with a red box. Other menu items include ACTS, POLICIES AND GUIDELINES, DISEASE PREVENTION AND CONTROL PLANS, MANUALS AND STANDARD OPERATING PROCEDURES, and ESSENTIAL VET DRUG PROGRAM. On the right, there is a search bar and a section for "CURRENT DISEASE OUTBREAKS" with a map of Bhutan.

ཀུལ་ཡོངས་སློན་ཁྲིམས་པའི་སྡེ་བ
NATIONAL CENTRE for ANIMAL HEALTH
Department of Livestock, Ministry of Agriculture and Livestock

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LSD VACCINATION PROGRAM 2023

SEARCH
Search here,

CURRENT DISEASE OUTBREAKS



<https://ncah.gov.bt/>



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