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Annual Livestock Sector Progress Report 2021-2022, 3rd series

Published by: Pemagatshel Livestock Sector, Department of Livestock, Ministry of Agriculture and Livestock (**MoAL**)

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Foreword

The Annual Livestock Report 2021 is the 3rd series of publications by the Dzongkhag Livestock Sector. It is intended to record information on livestock activities, livestock population, and production in the district for better planning and efficient resource mobilization. Further, it is to document the progress report of the financial year of the Dzongkhag Livestock Sector.



The Publication is presented in four sections:

1. Part I contains Livestock Population.
2. Part II contains Livestock Production.
3. Part III contains the Breeding Program.
4. Part IV contains Input Supply
5. Part V contains Animal Health
6. Part VI contains Big Ticket Initiatives Projects
7. Part VII contains the Dairy Farmers group
8. Part VIII contains Challenges and a way forward.
9. Part IX contains Conclusion
10. Part X contains staff information, Dzongkhag Livestock Sector.

The information recorded in this report is expected to help the livestock sector, Pemagatshel to have a broader idea during the planning and researching of the livestock development program. Moreover, it is to provide a "Snapshot" and rationale for the dynamics of livestock production in the district. It is our hope and aspiration to make the data available to the stakeholders, and eventually to come up with the evidence-based decisions for holistic Livestock development in the district.

I would like to extend my sincerest appreciation to all my colleagues under the Dzongkhag Livestock Sector, and Mr. Yonten Dorji and his colleagues for their vital efforts in coming out with a useful and informative publication. We look forward to having the 4th edition in July 2023.

A handwritten signature in blue ink, consisting of several fluid, connected strokes that form a stylized name.

Mr. Thinley Rabten

CHIEF DZONGKHAG LIVESTOCK OFFICER

Methodological Processes

It is imperative that while collecting data, the process, methodology, and validation are crucial to having valid data that can fulfill the objectives

□To obtain reliable information on the livestock population and production for planning and monitoring livestock development programs.

□To understand livestock farming, Livestock population, and production trends in livestock dynamics.

Data collection, validation

Primary data using a designed data collecting format (questionnaires) through a participatory approach to obtain the relevant information from the respondents. Data is collected from 11 gewogs of the country at the household level by the livestock extension staff. The data collection, validation, and compilation were first done at the Gewog level by the extension staff and later forwarded to Dzongkhag Livestock Office for further validation and submission to the Department of Livestock. Secondary data from Veterinary Information System (VIS) and Livestock Statistics (2019) were referred to obtain a relevant record. During the survey, 2338 Households participated in the interview as indicated(fig.1) although it was mandated to cover 100% of households.

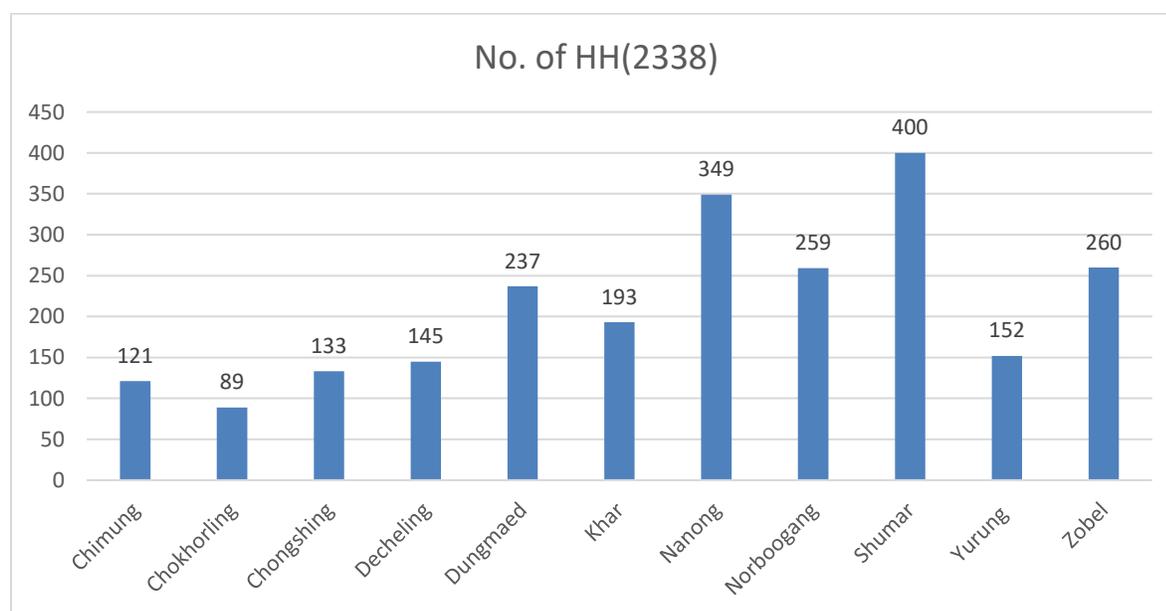


Figure 1:Data representation

Limitations of the data

Although various techniques were used to obtain authentic data as far as possible, however, the respondents were farmers with different social and educational backgrounds. As a result, it must have eventually led to some response errors. While under-reporting of population and production due to fear of taxation could have attributed to the source of error. While the short duration for data collection by the data enumerators in the field could be another source of data error. As a result, the interviewers left out quite a good number of households attributing to data discrepancies. It was also learned that some of the gewog production was missed out during the annual census and attributed to under-reporting of the data. However, the monthly and quarterly reports were used to further validate the data.



(Yonten Dorji)

Sr. Livestock Production Officer

Dzongkhag Veterinary Hospital

BACKGROUND

The annual progress report 2021-2022 is an achievement report compiled by Dzongkhag Livestock Sector, Pemagatshel. The purpose of this report is to keep records and maintain reliable information on livestock activities of the Dzongkhag for future planning and monitoring of livestock development programs. The data/figures were collected from 11 gewogs, Dzongkhag Veterinary Hospital, and the Dzongkhag livestock office within the period 1st July 2021 to 30th June 2022.

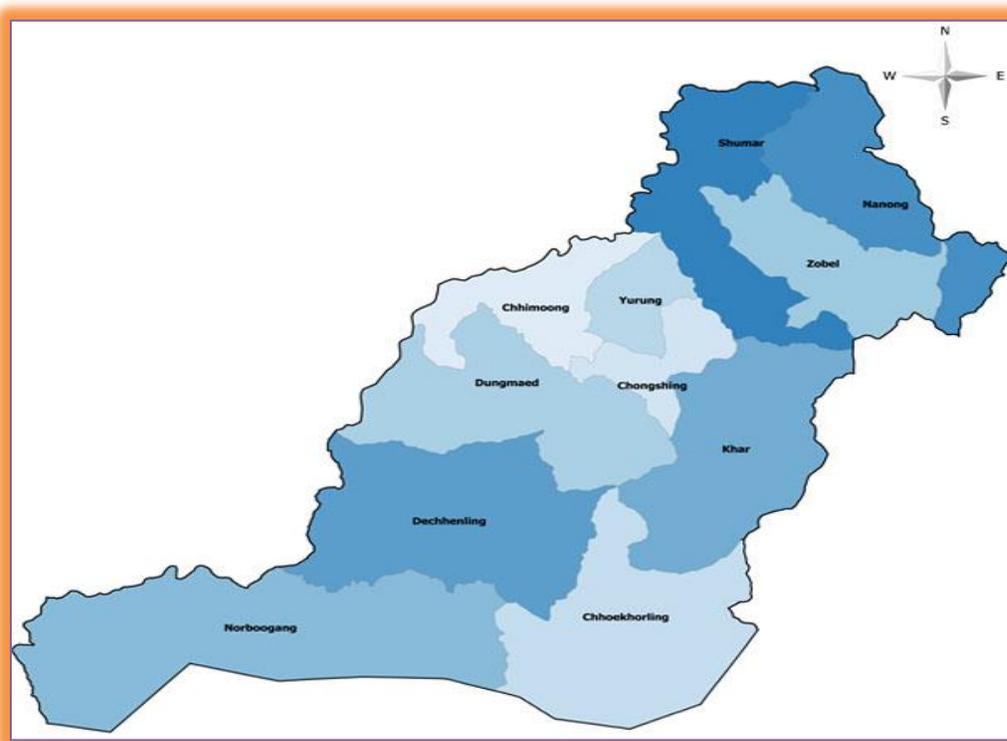


Figure 2: Pemagatshel Map

Source: Google map

1. LIVESTOCK POPULATION 2021

The sector recorded 43035 livestock for the year 2021-2022. Poultry accounts for the highest (32713) followed by cattle with 7434. Amongst the cattle, the Jersey breed is mostly preferred by the farmers (5424). A lone pure Mithun bull has been reported. By Yurung Gewog. While the stray dogs’ population 2072 (Nationwide free dog roaming survey, 2021) have been reported however sector recorded 931 utility dogs.

Table 1: Livestock Population 2021

Category	Numbers
Cattle	7434
Mithun	1
Equine	72
Pig	127
Poultry	32713
Goat	33
Cat	1724
Dog	931
Total	43035

Source: Annual Livestock Census, 2021

The Dzongkhag has 11 brown swiss, 78 holstein Friesian, 5424 jersey corss, 225 pure jersey, 31 doeb-doebum, 11 doethra-deethrum, 104 jaba, 590 Jatsha-Jatsham, 664 nublang-thrabum and 296 yangku-yangkum. The population of native poultry is 389 males and 1549 which makes the dzongkhag rich in native poultry. In the year 2021, Eight bovines and 106 poultry were lost to wild animals and predators.

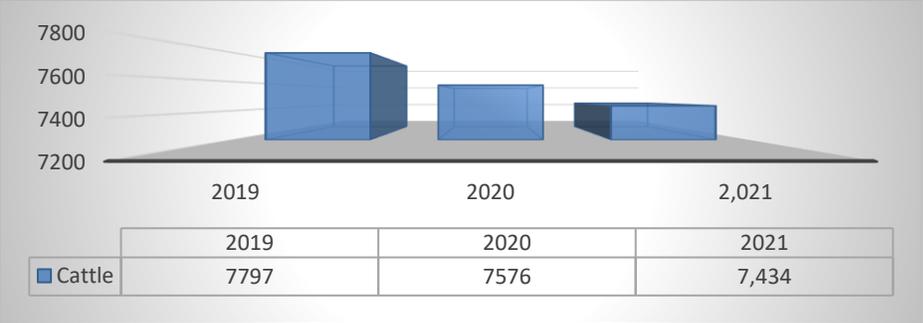


Figure 3: Cattle population trends

Figure 3 depicts that the cattle population is declining over the three years. This could be due to the cattle sourcing by the Neighbouring Dzongkhags who have been the regular customers for the dairy sourcing in Pemagatshel. Moreover, the support from the CARLEP has encouraged them to procure more cows as there is a ready market for fresh milk at KIL, Chenangri, and Trashigang.

Table 2: gewog wise cattle population

Gewog	Brown Swiss	Brown Swiss Pure	Doeb- Doeb bum	Doethra- Doethrum	Holsten Friesian	Jaba	Jatsha- Jatsham	Jersey Cross	Jersey pure	Mithun	Nublang- Thrabum	Yangku- Yangkum	Total
Chhimoong	-	-	-	-	-	14	56	219	24	-	51	13	377
Chhoekhorling	-	-	-	-	1	3	1	262	1	-	27	2	297
Chongshing	-	-	-	-	-	8	17	219	14	-	42	24	324
Dechhenling	-	-	12	-	-	5	19	401	9	-	-	8	454
Dungmaed	1	-	9	-	-	19	81	422	52	-	25	29	638
Khar	-	-	-	-	-	28	53	328	22	-	44	24	499
Nanong	3	1	2	7	7	-	236	793	2	1	348	73	1473
Norboogang	-	-	-	3	69	7	1	651	30	-	10	33	804
Shumer	-	-	-	1	1	12	44	1,129	35	-	19	33	1274
Yurung	3	-	-	-	-	8	31	241	36	-	30	12	361
Zobel	-	3	8	-	-	-	51	759	-	-	68	45	934
Total	7	4	31	11	78	104	590	5,424	225	1	664	296	7435

Table 3: Gewog wise other livestock population

Gewog	Equine	Pig	Poultry	Goat	Cat	Dog (Utility/Pet)
Chhimoong	10	6	597	-	123	59
Chhoekhorling	3	-	1,446	-	62	13
Chongshing	9	-	2,085	3	85	14
Dechhenling	9	23	2,290	-	43	21
Dungmaed	19	24	4,029	-	133	100
Khar	3	-	1,367	-	116	83
Nanong	6	33	2,155	13	282	176
Norboogang	9	4	3,454	3	248	92
Shumer	-	12	12,834	9	381	236
Yurung	4	17	758	5	53	42
Zobel	-	8	1,698	-	198	95
Total	72	127	32,713	33	1,724	931

Figure 4. indicates that major milching cows comprise 1410 Jersey crossbreeds, Nublang-Thrabum, 59 Jatsham, and 44 Holstein Friesian.

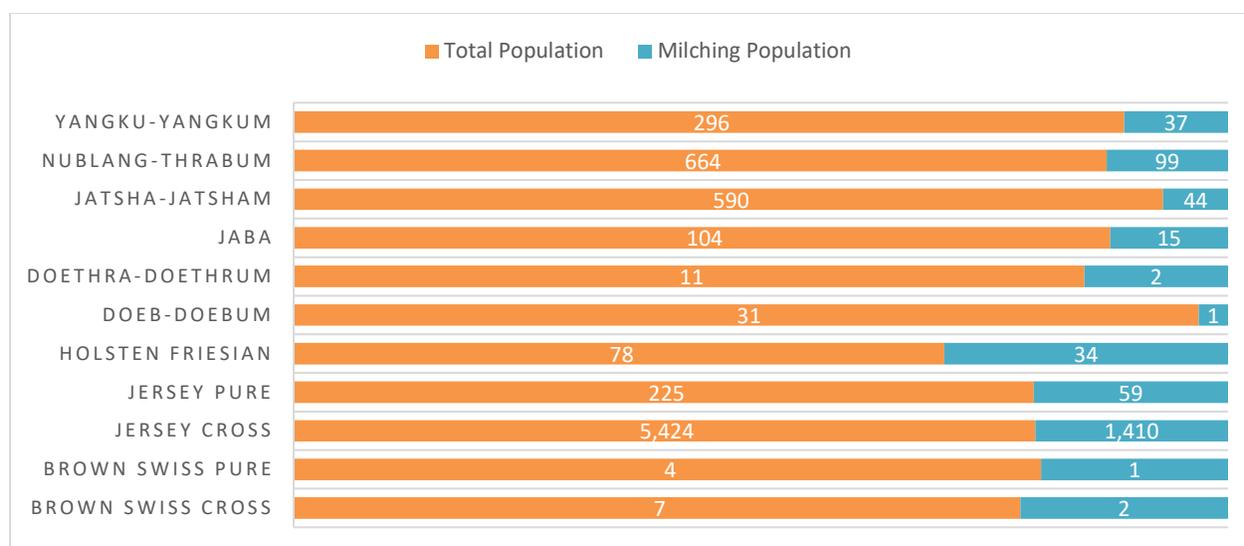


Figure 4: Cattle Population Vs. Milching Population

2. Livestock Production

The sector has been assigned to meet the production target (Table 4) in the 12th Five-Year Plan (FYP).

Table 4: APA target

Results Level	Indicators (KPI)	Indicator Unit	Baseline (2017)	Projected Annual Target				
				2018-19	2019-20	2020-21	2021-22	2022-23
Output 1: Meat Production Enhanced	Pork production	MT	26.89	28.22	29.57	30.91	32.25	34
	Fish production	MT	1.68	1.76	1.84	1.92	2	2.1
Output 2: Egg Production Enhanced	Egg production	Million	3.24	3.36	3.49	3.62	3.74	3.88
Output 3: Dairy Production Enhanced	Milk production	MT	1726	1798	1869	1941	2012	2084
Output 4: Climate livestock resilient farming promoted	Biogas Plant	Nos	192	73	62	62	53	50

Source: DLO, 2018

2.1 Dairy Production

In the year 2021-2022, two numbers of Milk Processing Unit were constructed in Yurung and Decheling Gewog to boost dairy processing in the district. There have been mixed trends in dairy production from 2019 to 2021 (Table 5), it depicts that milk production increased in 2020 and decreased in 2021, while there is an increase in butter and cheese production in 2021 compared to 2020. While milk and cheese production in 2019 was recorded as the highest. The drastic reduction in the milk could be probably due to the underreporting by inexperienced enumerators. The other reasons for the decline of milk production in 2021 could also be due to the lesser number of household coverage during the survey carried out by the part-time enumerators. This eventually has been a major setback in fulfilling the Annual Target for milk production in the Dzongkhag. In reality, milk production is much higher than the one reported by the enumerators.

Table 5: Dairy production trends, 2019-2021

Year	Dairy (KG)		
	Milk	Butter	Cheese
2019	1896265	78712	141353
2020	1974569	67426	113457
2021	1596430	81480	121900

Source: DLO, Pemagatshel

Most of the dairy products are marketed outside the Dzongkhag as a result of surplus and it can confirm that there is self-sufficiency in dairy products in the Dzongkhag. The dairy products are mostly marketed in Thimphu, Trashigang, and Samdrup Jongkhar. It has been experienced that cattle sourcing has been the most difficult activity under the dairy production program. Despite the interest and budget allocation, the sector is not able to get the desired high-producing cows within the country. While in some of the gewogs, farmers are not willing to source cows despite subsidies in place. The option for the long term is through commercial farming and the initiation of heifer farms. The short-term solution is to build up dairy resources through insourcing from India, however, disease screening should go along before sourcing.

Milk Production

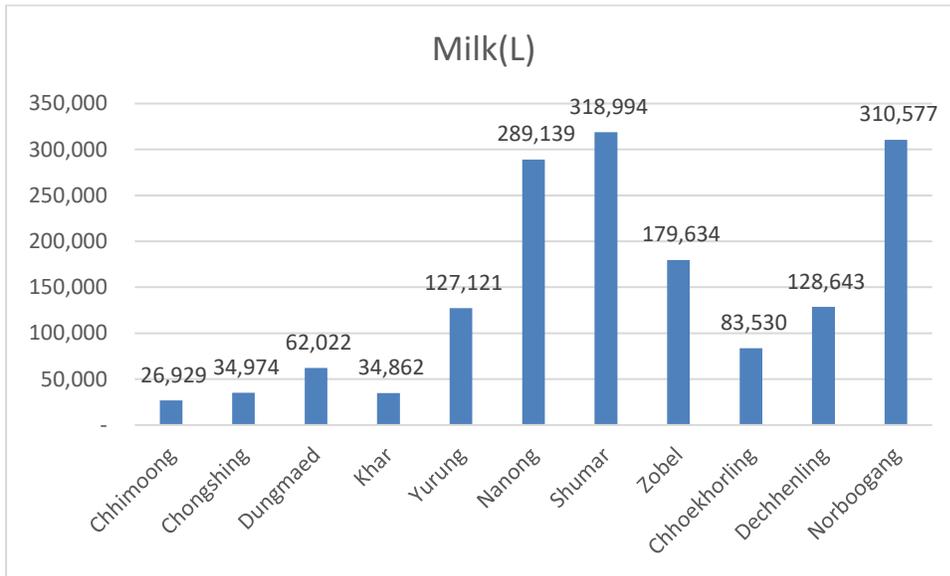


Figure 5:Gewog wise Milk Production

In the year 2021, Shumer Gewog contributed the highest Milk (318994 Litres) followed by Norboogang (310577 Litres), and the least by Chimung Gewog with 26,929 Litres (Figure 5).

2.2 Poultry Production

The sector has embarked to meet the annual target of 3.74 million eggs from 11 gewogs in the year 2021-2022. The sector achieved 4.40 million in which Shumer gewog contributed the highest (1.5 million) eggs followed by Norboogang Gewog (0.86 million) eggs. Most of the Gewogs could not meet the target, however, three gewogs of Shumer, Chokhorling, and Decheling achieved the APA target as indicated (Table 6). This could be because the inexperienced enumerators could not make full coverage during the survey which eventually lead to underreporting. While the less production may have been attributed to the feed problem that has eventually resulted in a decrease in egg production. While the positive sign is that the sector could achieve 4.40 million against the target of 3.75 million. The Dzongkhag is self-sufficient in eggs and it can be concluded that in the coming year, there should not be more investment in egg production. Poultry production had its difficulties as a result of feed toxicity and less egg price driven by the increase in feed cost.

Table 6: Egg Production Vs. Target

Gewog	Egg (Million)	
	Apa target (2021-2022)	Achievement
Chimung	0.11	0.04
Chokhorling	0.05	0.32
Chongshing	0.16	0.14
Decheling	0.05	0.68
Dungmaed	0.23	0.16
Khar	0.14	0.13
Nanong	0.46	0.34
Norboogang	0.87	0.86
Shumer	0.87	1.50
Yurung	0.18	0.08
Zobel	0.62	0.15
Total	3.75	4.40

Based on the field report, the Dzongkhag Livestock Sector will not focus much on poultry production farm establishment in the coming financial year, however, restocking of poultry birds can meet the APA Target and the egg demand in the Dzongkhag.

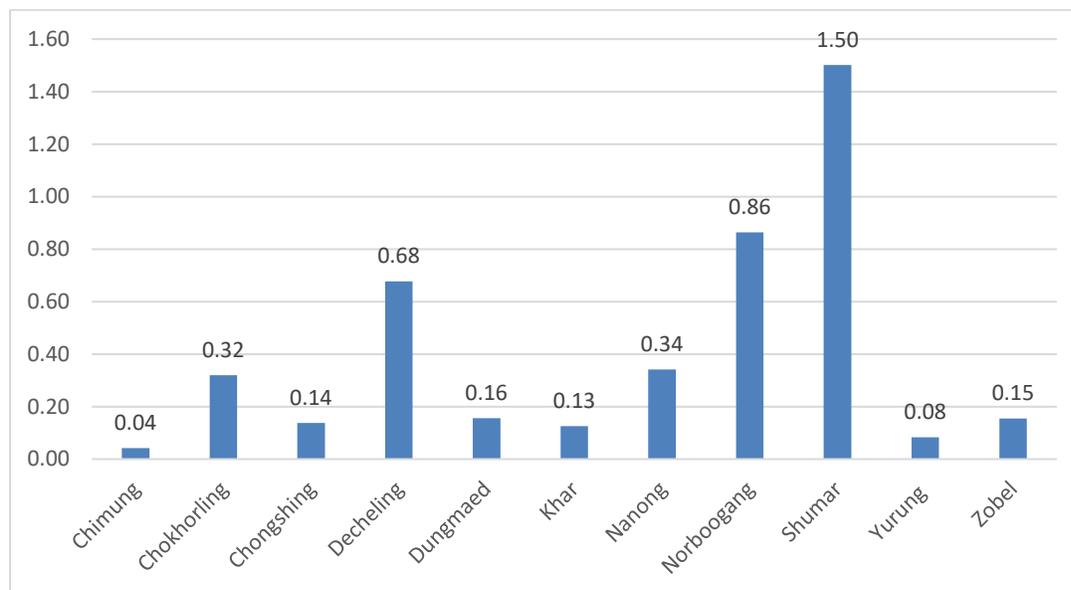


Figure 6: Egg Production by gewogs (Million)

Figure 6. shows that Shumer Gewog was the highest egg producer in the Dzongkhag followed by Norboogang (0.86 million), and Decheling(0.68 Million). in the year 2021-2022, Chimung and Yurung Gewog produced the minimum egg 0.04 million and 0.08 respectively.

Poultry Production Trends

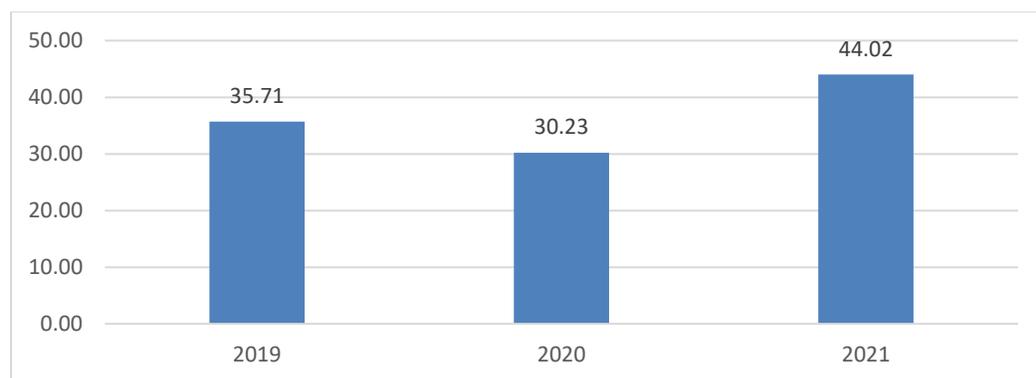


Table 7: Egg Production trends

Figure 7, indicates that there was a decrease in egg production in 2020, and has increased in 2021. The increase in egg production could be due to an increase in semi-commercial farms in the district. Table 8 shows that Shumer has the maximum commercial farm (3), followed by Khar (2), while Chimung has the maximum backyard (33). In total the dzongkhag has 177 numbers poultry farms, of this backyard farms (138), Semi-commercial (32 while 7 farms are commercial.

Table 8: Poultry Farm Types

Gewog	Nos. of farms	semi-commercial farm	commercial Farm	Backyard Farm
Chhimung	36	3		33
Choekhorling	6	2		4
Chongshing	2	2		
Decheling	3	3		
Dungmin	23	2	1	20
Khar	5	3	2	
Nanong	22	2		20
Norboogang	25	4	1	20
Shumer	28	5	3	20
Yurung	7	2		5
Zobel	20	4		16
Total	177	32	7	138

Source: Quarterly reports, 2021-2022

2.3 Fishery Production

Currently, the district has four fish farmers in three gewogs of Shumer, Nanong, and Norboogang. In the district, a total area of 16960 M² is used for fish production at Shumer, Nanong, and Norboogang with 12954 M², 3906 M² and 100 M² respectively (Table 9). The year 2021-20202 saw 0.697 MT/697 kg of fish production from three Gewogs of Norboogang, Nanong, and Shumer against the total target of 2 MT. The target could not be achieved as the summer flash flood damaged the ponds at Shumer. Moreover, the lack of funding support for fish production also hampered fish production. Moreover, there were reports from the fish farmers about the loss of fish to the predators. However, the sector would put more effort to meet the target in the coming years. It can be concluded that if the sector has to meet the target, the fish farmers should be supported with fish meals and fencing materials. A total of 42000 fingerlings were distributed to fish farmers of Shumer (30000) and Nanong (12000).

Table 9: Pond areas & production

Gewog	No.of farmers	Total no of Ponds	Pond area(m2)	Fish production 2019-2020 (kg)
Nanong	1	4	3906	477
Norboogang	2	2	100	19
Shumer	1	13	12954	161
Total	4	19	16960	657

Source: Quarterly fishery reports, 2021-2022

2.4 Piggery Production

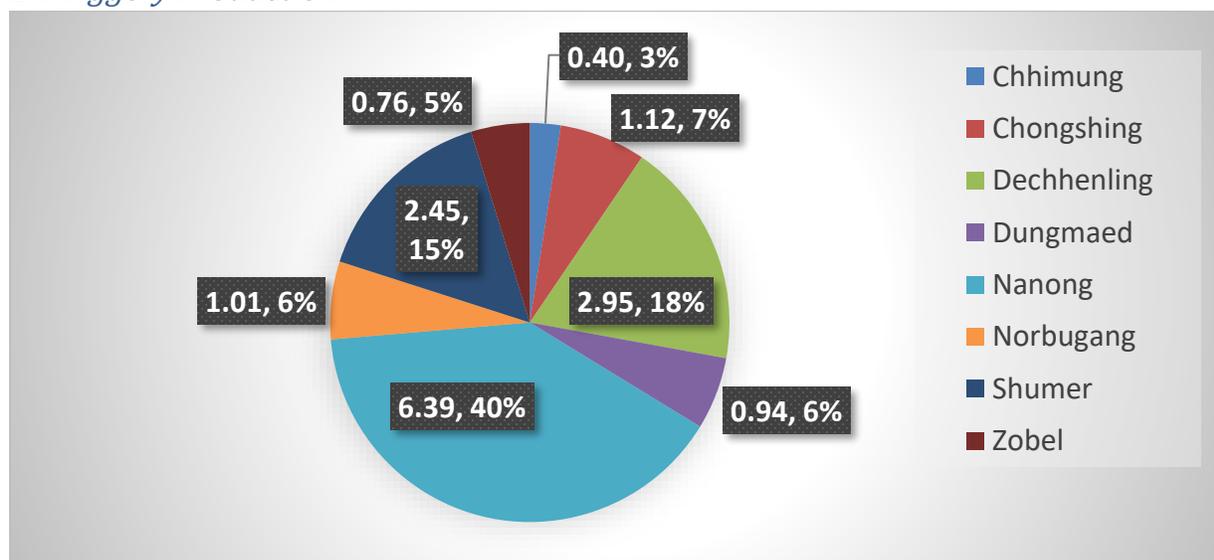


Figure 7: Gewog-wise Pork Production

Overall, the sector produced 16.02 MT of pork in 2021-2022(Figure 7). Nanong contributed 40% of pork production in the Dzongkhag (6.39 MT), followed by Decheling Gewog (2.95 MT) and Shumer (2.45 MT). While, the three gewogs of Khar, Yurung, and Chokhorling were not involved in pork production due to a lack of interest from the farmers. Since the dzongkhag import pork from India and to stop this trend, the sector has initiated 2 commercial piggery farms, one each at Norboogang and Shumer Gewog.

2.5 Biogas Production

The biogas production in the gewog has been a daunting task for the year 2021-2022. People have shown not much interest, however, most of the targets of the gewogs have been either achieved or some of the gewog reduced their target.

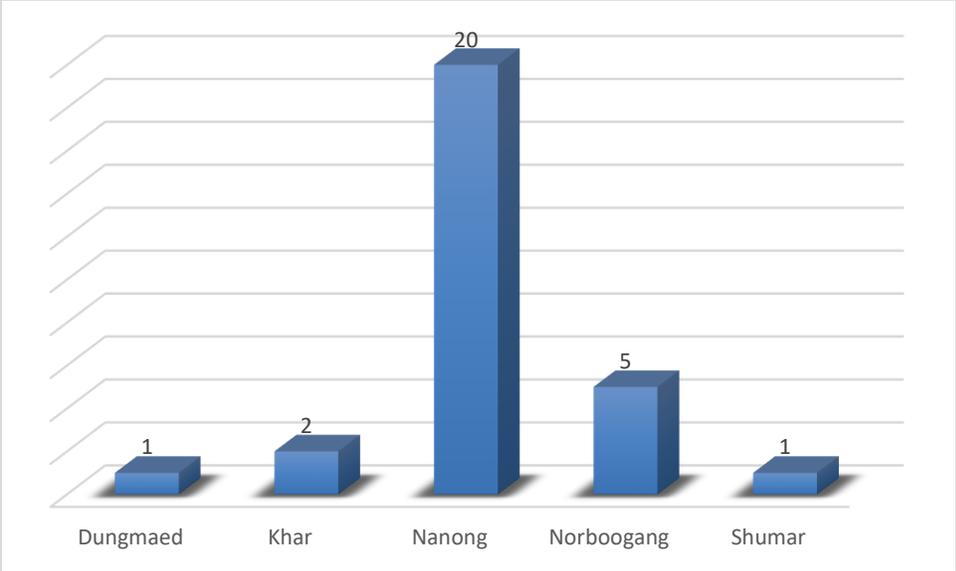


Figure 8:Biogas plant constrcution,2021-2022

Source: DLO, 2022

Nanong gewog constructed the maximum biogas (20) followed by Norboogang (5), and Khar gewog constructed 2 plants followed by one plant each by Dungmaed and Shumer (Figure 8). It was experienced that farmers are not interested in the construction of a Biogas plant considering the huge involvement of the workforce during the construction. Further, most of the farmers own biogas plant and at this moment it seems there is almost no demand for biogas plant as it has already reached the saturation point. For the 13th FYP, the sector will not embark on the Biogas program as an interim period.

2.6 Fodder Production

In the year 2021-2022, A total of 151.7 Acres of fodder plantation was carried out to boost the fodder resources in the district. Such a program has benefited the dairy farmers at large to overcome fodder shortages during the winter seasons and eventually milk production has increased during the winter over the years.

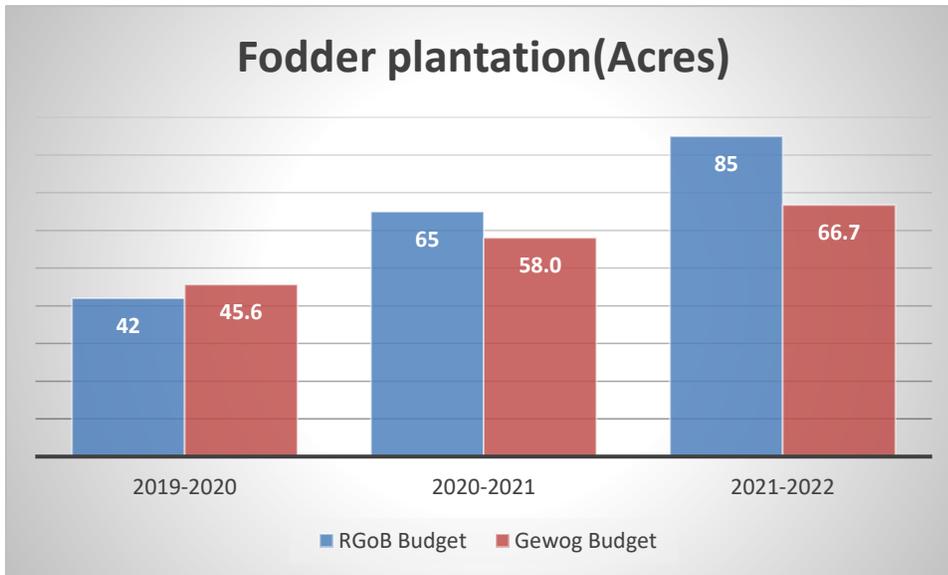


Figure 9: Fodder plantation trends

The fodder plantation trend is increasing every year with the support from Dzongkhag and Gewog budget (Figure 9). It reflects that the gewog has recognized the role of fodder resources in dairy production and there is fund allocation for fodder development from the gewog. Ruzi and molasses are the seeds cultivated by the farmers. The Dzongkhag is actively involved in fodder seed production and has generated huge income for some sections of the farmers. The year 2021-2022 recorded the highest revenue of Nu.6,26,550 from the sale of fodder seeds (Table 10). The seed production trends are increasing over the years and can be concluded that some section of farmers depends on their livelihood through the sale of fodder seeds.

It is also noticed that dairy farmers show lesser interest to cultivate winter fodder which has been one of the prime reasons for not being able to increase milk production during winter and lean months when there is scarce fodder.

Table 10: Revenue Generation from Fodder seed sale

Year	Quantity of Seed		Total Seeds(kg)	Rate (Nu.)	Amount (Nu.)
	Ruzi (Kg)	Molasses (Kg)			
2019-2020	3101.5	72.2	3173.7	150	476055
2020-2021	3973.5	92.5	4066	150	609900
2021-2022	4177	0	4177	150	626550
Total	11252	164.7	11416.7	150	1712505

Source: DLS,2022

3. Breeding Program

The breeding program is so vital for dairy farmers to improve the breed. Breed improvement is done in two ways. The first one with the Natural Services and the second with Natural services by the bulls.

3.1 Artificial Insemination

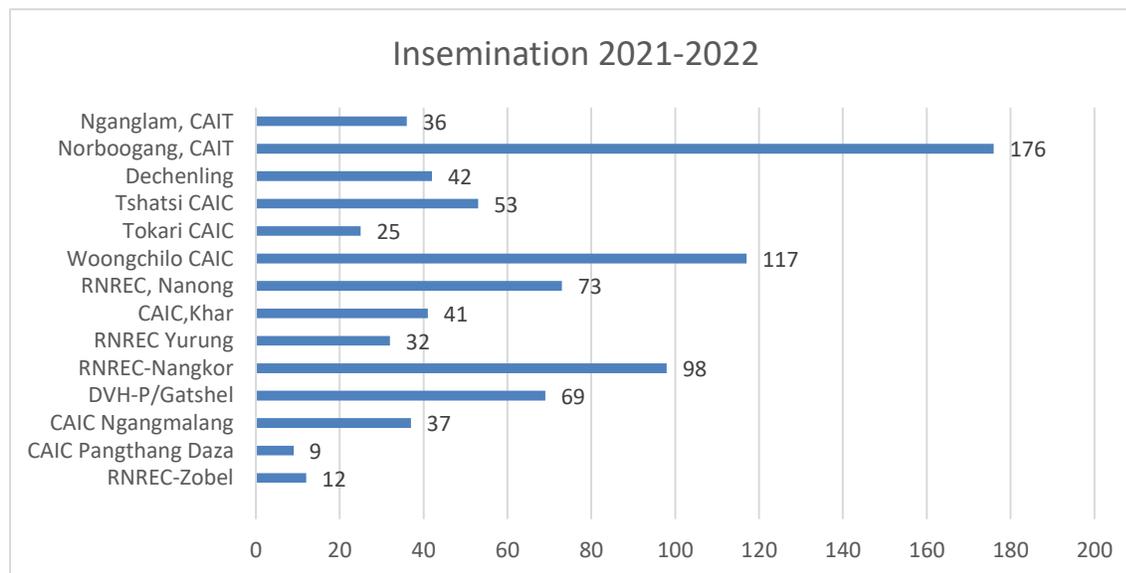


Figure 10: Artificial Insemination by the centers

There are 14 Artificial Insemination Centres in the Dzongkhag (Figure 10) which is inclusive of Community Artificial Insemination Centres(CAIC). Norboogang CAIC has inseminated the highest numbers (176), followed by Woongchilo(117), and Nangkor (98).

The conception rate was found to be highest at CAIT Khar with 75.6% followed by DVH with 65.2%. However, the total conception rate for the Dzongkhag stands at 31.3% (Table 11), which is slightly lower than the national level (37%). Although the A. I center at the gewog has achieved the national conception rate, however, the conception rate at some of the CAIT field conditions is much lower and has affected the overall dzongkhag conception rate. Considering that analysis, some of the CAIT centers should be closely monitored to rectify the issues.

Table 11: Insemination Vs Conception

Centers	Insemination 2021-2022	Progeny 2021- 2022		Total progeny	Conception(rate)
		Male	Female		
RNREC-Zobel	12		6	6	50.0
CAIC Pangthang Daza	9	0		0	0.0
CAIC Ngangmalang	37	6	1	7	18.9
DVH-P/Gatshel	69	10	35	45	65.2
RNREC-Nangkor	98	3	25	28	28.6
RNREC Yurung	32	4	12	16	50.0
CAIC-Khar	41	3	28	31	75.6
RNREC, Nanong	73	12	15	27	37.0
Woongchilo CAIC	117	16	23	39	33.3
Tokari CAIC	25	2	0	2	8.0
Tshatsi CAIC	53	4	2	6	11.3
Dechenling	42	3		3	7.1
Norboogang, CAIT	176	11	21	32	18.2
Nganglam, CAIT	36	8	7	15	41.7
Total	820	82	175	257	31.3

3.2 Natural Services

The year saw 2 numbers of jersey bull distributed to Chimung Gewog for natural services. There are government bulls stationed in 10 Gewogs to provide natural services to the dairy cattle. In the year 2021-2022, 254 natural services were performed by the bulls. However, 131 progenies have been recorded within the time (Table 12). Chimung gewog recorded the highest progeny born (44 nos), Decheling with zero progeny and less service by the bull. Chimung and Decheling recorded the low numbers of progeny born (2) as indicated in Table 12.

Table 12: Natural service record 2021-2022

Gewogs	Natural Service			Progeny Born		
	Local	Improved	Total	Male	Female	Total
Chimung	11	49	60	23	21	44
Chhokhorling	2		2			0
Dechenling	7	5	12	2	0	2
Dungmin	10	8	18	2	0	2
Khar	10	13	23	7	8	15
Norboogang	30	18	48	10	13	23
Shumer	0	65	65	10	17	27
Yurung	0	3	3	0	2	2
Zobel	4	19	23	5	11	16
Total	74	180	254	59	72	131

It can be reflected that despite bulls placed in remote places where Artificial Insemination is beyond reach, the progress seems far beyond the expectation. It is recommended either to relocate the bulls for better services and higher progeny performance. Moreover, the health management of the bulls should be monitored regularly

4. Input Supply

It is experienced that without proper input supply, livestock production cannot be achieved as projected. The subsidy packages are vital for small-scale farmers to encourage livestock farming.

4.1. Pullet distribution

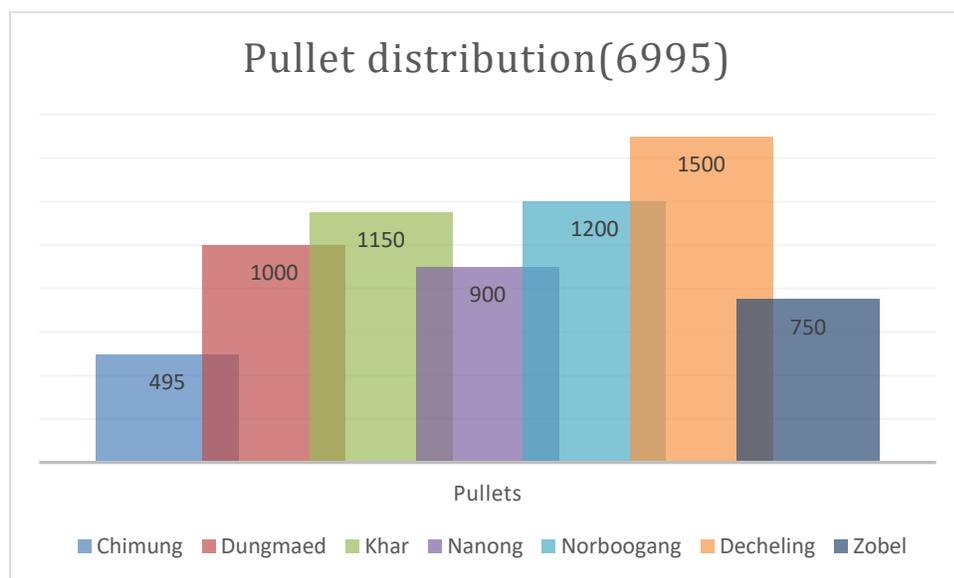


Figure 11:Pullet Supply 2021-2022

Source: Gewog Livestock Extension Office and DLO office,2022

Figure 11 depicts the pullet supply 2021-2022 of 6995 numbers in seven gewogs of Chimung, Dungmaed, Khar, Nanong, Norboogang, Decheling, and Zobel. Decheling recorded the highest supply (1500) followed by Khar (1150) and the least at Chimung(495). The above figure indicates that 4 other gewogs should encourage egg production as a protein supplement and income generation.

4.2. Piglet Distribution

Pork production is very essential to meet the meat demand in the district although religious stigma hinders the production. Despite struggles, 179 piglets were distributed in six gewogs of Nanong, Norboogang, Decheling, Shumer, Yurung, and Zobel (Table 13). Over the years there has been decreasing trend in the number of farmers involved in pork production. To curb the situation, the Sector needs to come up with a commercial farm in the coming 13th FYP although the recent two big-ticket initiatives piggery commercial farms have been established. There is the possibility of leaving pig farming in Yurung Gewog has been expected.

Table 13: Piglet Distribution

Gewog	Nos
Nanong	51
Norboogang	20
Decheling	23
Shumer	69
Yurung	11
Zobel	5
Total	179

Source: Gewog Livestock Extension Office and DLO office, 2022

4.3. Temperate & Sub-Tropical Fodder development

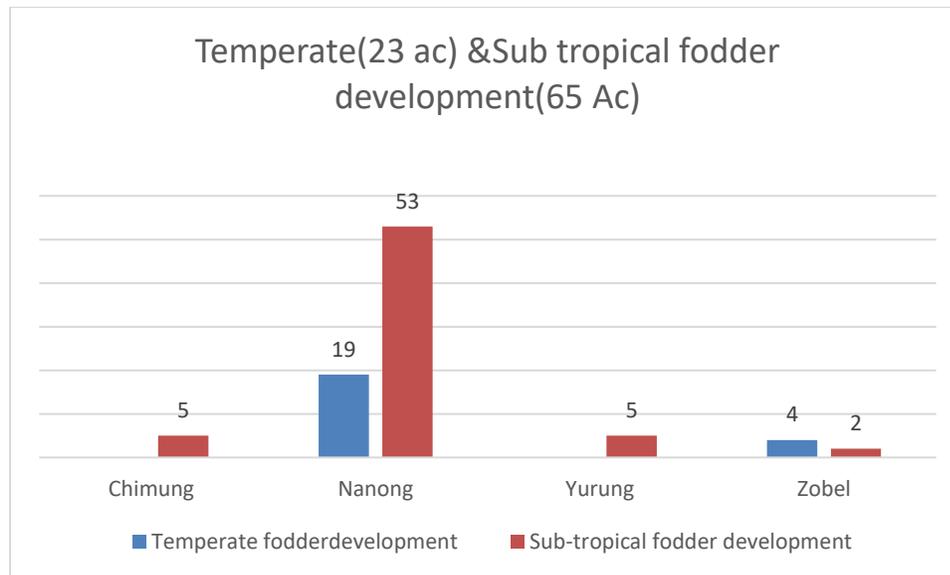


Figure 12: Temperate and Subtropical fodder development

In the year 2021-2022, Only four gewogs opted to develop temperate and subtropical fodder development. Nanong Gewog developed the highest Temperate and subtropical fodder (Figure 12). Zobel Gewog developed 4 acres of temperate and 2 acres of sub-tropical grasses. Yurung and Chimung cultivated 5 acres of Sub-tropical grasses. It can be concluded that not many gewogs are interested to develop perennial fodder grasses.

4.4. Oat and Fodder seedlings

A total of 36 acres of oat cultivation was cultivated with Nanong Gewog cultivating the highest (Table 14), While Norboogang and Chokhorling Gewog did not cultivate oat and neither fodder seedlings. Khar

Gewog supplied the highest number of fodder seedlings (940 nos.) while, Chimung, Chongshing, and Decheling gewog did not plant a single fodder tree. In total 3045 fodder seedlings(ficus) were supplied to increase the fodder resources in the Dzongkhag.

It indicates that despite oat being the proven fodder for the winter, most of the gewogs are cultivated in small quantities and eventually would not contribute much to the fodder resource during winter and the milk production during the winter will not increase much. While encouraging the plantation of fodder trees can also add to the fodder resources and eventually can contribute to increased milk production during the winter.

Table 14: Oat and fodder tree supply 2021-2022

Type of inputs	Oats(acres)	Fodder seedlings(Nos)
Chimung	4	
Chongshing	5	
Dungmaed	3	
Khar		940
Nanong	10	
Decheling	5	
Shumer		5
Yurung	5	2000
Zobel	4	100
Total	36	3045

4.5. Root Slips Supply (Pakchong and Guatemala)

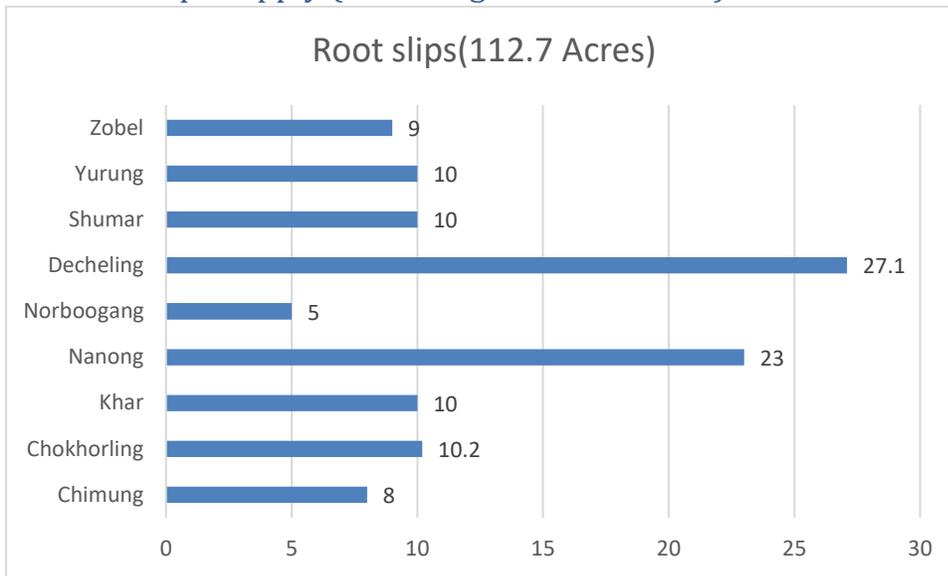


Figure 13: Root Slips distribution (Acres)

Figure 13, indicates that the Decheling gewog supported the highest root slips (27.1 acres), while Dungmaed and Chongshing Gewog did not supply. With such a trend in fodder production, there is certainly a potential for fodder conservation. There is an immediate need for the intervention of fodder conservation for the winter lean months. The sector needs to seriously work out with conservation technology to curb the winter fodder shortages.

4.6. Cow and Heifer Supply

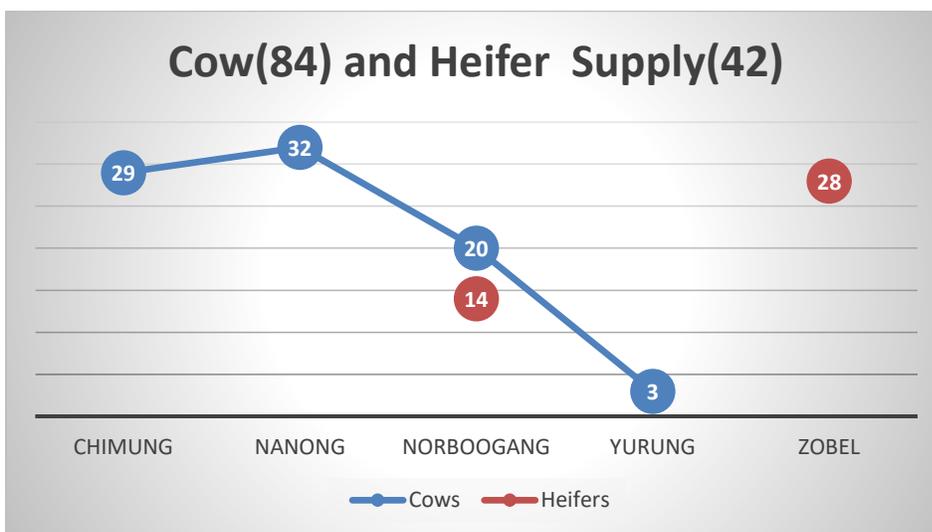


Figure 14: Cow and heifer Supply

A total of 84 cows and 42 heifers were supplied in four gewogs of Chimung, Nanong, Norboogang, and Zobel. Nanong Gewog supported 32 Cows followed by Norboogang (20) and lead by Yurng (3). While Zobel (28) and Norboogang(14) were supported with 100% subsidies for the distribution of Heifers(Figure 14).

It depicts that most of the gewogs are not able to avail of the subsidies to procure cows and eventually the milk contribution from those gewogs is beyond the projected target.

4.7. Cattle Shed Construction support

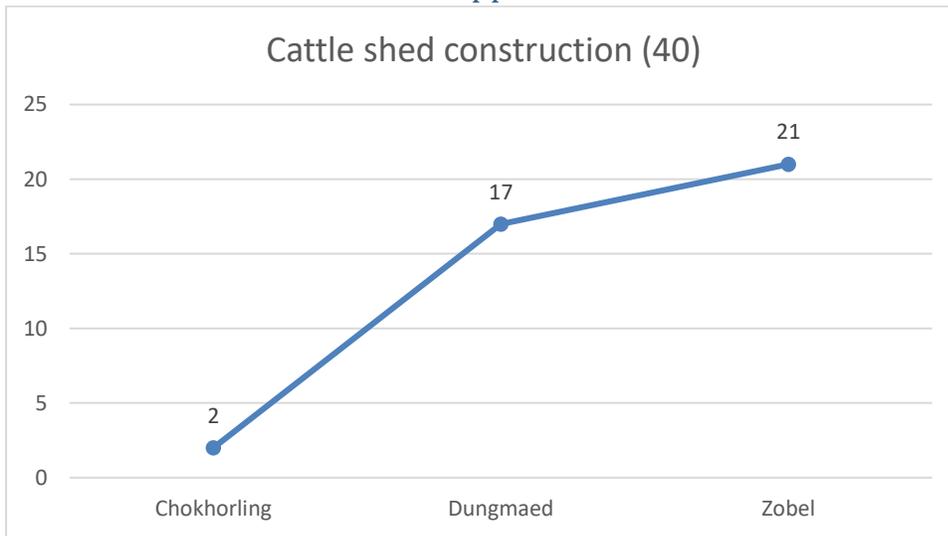


Figure 15: Cattle Shed support, 2021-2022

Only three gewog of Chokhorling, Dungmaed, and Zobel were supported with the Cattle shed construction inputs, and eventually, Zobel (21), Chokhorling(2), and Dungmaed(17) could successfully construct cattle sheds(Figure.15). Looking into the trend, it can be concluded that the cattle shed support has reached the saturation point in which most of the farmers in all the gewog owns cattle shed. Henceforth, it is not to focus much on allocating budget for cattle shed construction in the coming 13FYP.

5. Animal Health

The Dzongkhag Veterinary Hospital along with 11 RNR-EC in Gewogs coordinates and conducts animal health delivery services in the Dzongkhag. It provides prompt services for both on-station and outstation cases on regular basis. The centers strive towards prevention and control of diseases outbreak in Dzongkhag through timely vaccinations. With the introduction of the Veterinary Information system (VIS), Clinical services, sterilization of the animals, deworming of the animals on regular basis, vaccination of different species of animals on a timely basis, proper registration and management of the pet animals, and proper diseases outbreak reporting in the Dzongkhag are being streamlined.

5.1 Clinical Cases

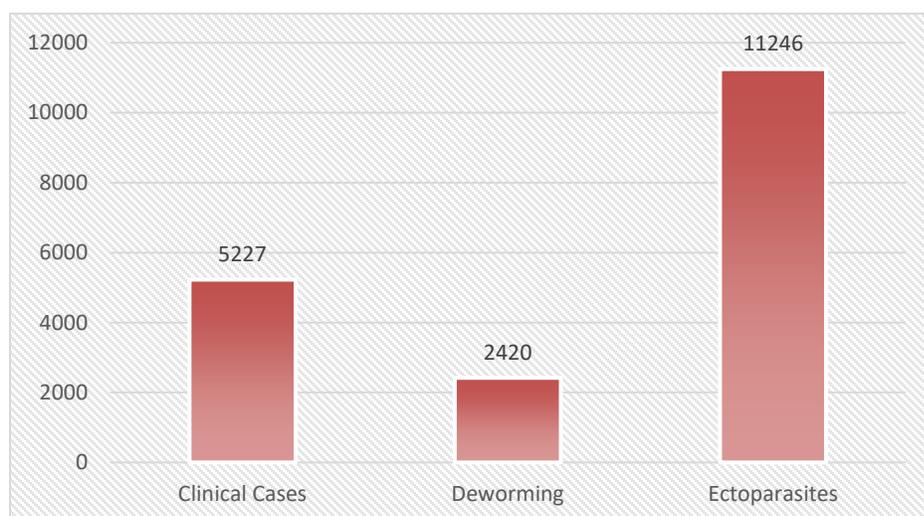


Figure 16: Animal Health Services

Source: VIS and field report

The Dzongkhag recorded the highest cases of ectoparasitic infestation in the livestock (Figure 16). It was learned that cases are recorded high during the warmer season of the month. To supplement the use of deltamethrin we have used ivermectin to treat the tick infestation cases in the animals. The clinical cases recorded are mostly the outcall attended in the field, as farmers find it difficult to bring the cases to the hospital as most of the cases reported are farm animals.

5.2 Vaccination

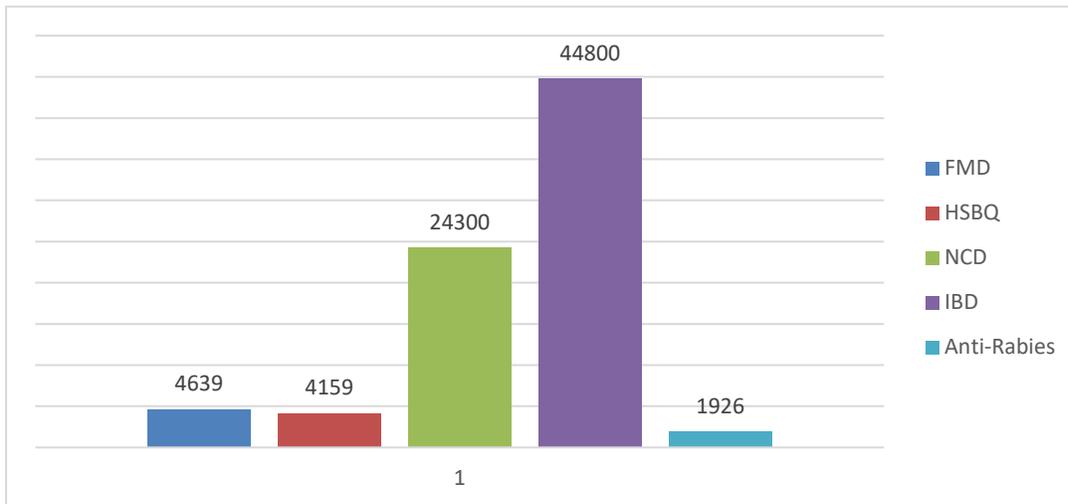


Figure 17:Vaccination Type

Source: VIS and field reports

As indicated (Figure 17), the highest vaccination was done against Infectious Bursal Diseases in Poultry and the least for anti-rabies in the canine population.

The Dzongkhag reported the outbreak of the black quarter in the Khar gewog resulting in the death of 19 cattle in the Gewog. All prophylactic measures like treating sick animals, ring vaccinations, and disposing of the carcasses were carried out to contain the spread of the diseases in the locality.

5.3 Sterilization

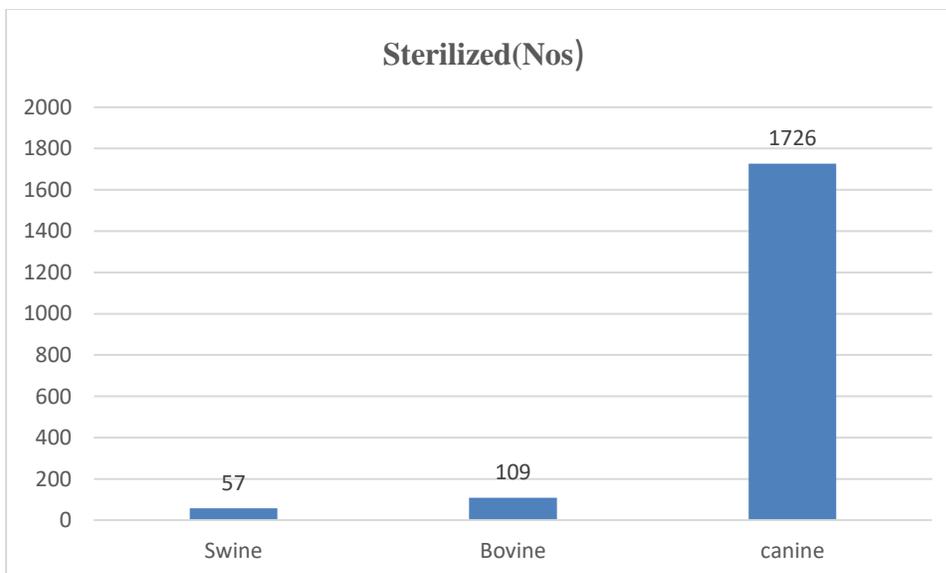


Figure 18: Sterilization

The DLS sterilized 57 pigs, 109 bulls, and 1726 canines in the year 2021(Figure 18). The sterilization of bulls needs to be carried out vigorously if the Dzongkhag is to improve the cattle breed within a short period. Annual Sterilization Campaign is a solution as a way forward.

6. Big Ticket Initiatives Projects

The Big-Ticket Initiatives Projects (BTI) are funded by the Department as an intervention to increase livestock production in the district. The Dzongkhag has 5 commercial farms, 1 broiler farm, and 2 Piggery breeding farms.

6.1 Layer and Broiler Production

Through Big Ticket initiatives, the sector established five-layer farms and two pig breeding farms.

Five-layer farms have been established at Dungmed, Khar, and Shumer with 1500 capacity. While a sole broiler farm has been established at Duruingri under Dungmed Gewog. With this establishment, it



is approximated that the annual egg production of 14,40,000 can suffice the egg demand of the Pemagatshel Dzongkhag. Once the production starts, it is approximated to have 4000 eggs daily production from the BTI farms. While 20 MT of chicken will hit the market every two months. Such initiatives will help in the import substitution of chicken.

Figure 19:BTI Layer farm at Yajur

6.2 Piggery Breeding Farm

Piggery production has been challenging in the district due to religious stigma although there is a huge demand for pork. The Dzongkhag Livestock Sector established 2 piggery farms at Shumer and Norboogang Gewogs mainly for breeding under the BTI support. While pork production is also carried out in the BTI farm for sustainable pig farming. We look forward to meeting the piglet demand in the coming years. Currently, the farm has 20 breeding and 20 fattening pigs.



Figure 20:Piggery farm at Borangmo

6.3. Budget Fund and Utilization

The budget utilization was done very judiciously as per the lowest quotation rate, some quotation rates were followed as per the dzongkhag rate while that equipment not listed in the Dzongkhag was procured from nearby dzongkhag Dzongkhag quotation rate. Through such initiatives, some funds were saved and accordingly required materials and equipment were procured.

As indicated in Table 15, Nu.5953970 was spent on the BTI projects. The projects were supported by the Department. It indicates from Table 14 that the highest expenditure is incurred in Poultry BTI structure development (Ngultrum 4290420), followed by Ngultrum Eight Lakhs Forty-Eight Thousand Fifty in Piggery Enterprise and Ngultrum Eight Lakhs Fifteen Thousand Five Hundred, only.

Table 15: Expenditure on BTI activities

Sl.#	Name of work	Amount (Nu.)
1	BTI piggery enterprise structure development	67638
2	BTI piggery enterprise structure development	780412
3	Poultry BTI Structure Development	2000000
4	Poultry BTI Structure Development	2290420
5	Poultry BTI equipment Procurement	415500
6	Poultry BTI equipment Procurement	400000
7	Total	5953970

7. Dairy farmers' group

The dairy farmer group is the most popular group amongst livestock farmers with 630 members. The dairy group members produce milk and supply it to the Milk processing unit for processing into butter, cheese, yogurt, and ice cream.

7.1 Group composition and Herd Size

There are 11 functional dairy groups in the Dzongkhag with Nanong and Shumer gewog as the highest group (3), followed by Decheling and Zambala Dairy groups (2) as indicated in Table 16.

Table 16: Functional dairy group

Group/ Farmers Name	Gewog	Members	Total cattle
Zambala Natshog Namley Tshogdey	Norboogang	74	200
Nganglam Gonor Gongphel Detshen	Norboogang	62	110
Tshelingor Gonor Chethuen Detshen	Zobel	28	33
Gonpawoong Gonor Detshen	Decheling	15	30
Rezimo Gonor Gongphel Detshen	Decheling	18	40
Shumer Chuden Tshephel Detshen	Shumer	80	120
Shali-Gamung Gonor Detshen	Shumer	96	132
Bartseri Gonor Chithuen Detshen	Shumer	6	15
Yurung Gonor Ghongphel Detshen	Yurung	39	42
Terda Puensum Gonor Detshen	Nanong	61	139
Tokari Gonor Gongphel Detshen	Nanong	31	51
Tshatsi-Dagor Norlhai Detshen	Nanong	120	70

Source: Quarterly Report 2021-2022

Zambala Natshog Namley Tshogdey dairy group has the highest productive cows (200) and the Bartseri dairy group has the least (15). Except for the Bartseri dairy group which supplies fresh milk, the rest of the groups are involved in supplying dairy products like butter, cottage cheese, yogurt, and Paneer.

7.2 Dairy Group production

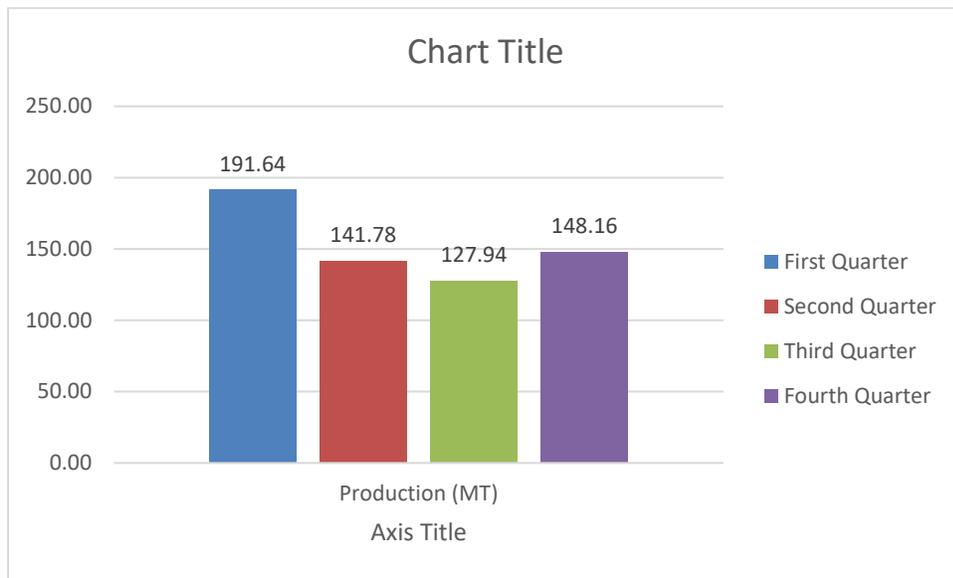


Figure 21: Milk Production by Dairy groups

It indicates that the highest milk production of 191.64MT was recorded in the first quarter (July-September 2021) by the dairy group while the least was in the third Quarter (Figure 21). The reason for the drop in the third quarter is attributed to the lean fodder season during winter months and this can be resolved through mass winter fodder cultivation. Such effort can be achieved through a collaborative approach wherein the livestock team and the involvement of the community can trigger a rise in production during winter months. In the year 2021-2022, the group contributed 600 plus milk MT which was processed into other dairy products like butter, cheese, paneer, yogurt, and ice cream.

The dairy group of Norboogang contributed the highest milk (266.2) followed by Nanong (153.88) as indicated (Table 16).

Table 17: Milk production by a dairy group

Gewog	Production (MT)
Norboogang	266.2
Zobel	25.52
Decheling	43.4
Shumer	105.02
Yurung	21.36
Nanong	153.88
	615.38

Nutrition Requirement

For the population of 23632 the Dzongkhag has to produce 297763.2 Kg milk, 3403008 eggs and 1389561.6 Litres milk annually (Table 18).

Table 18: Nutrition Requirement

Gewog	Human Population	Meat requirement in KG (12.6 kg/year)	Egg requirement (144 /year)	Milk Requirement (1225MI/Week/58.8 L per year)
Chimung	564	7106.4	81216	33163.2
Chhoekorling	703	8857.8	101232	41336.4
Chongshing	771	9714.6	111024	45334.8
Dechhenling	1680	21168	241920	98784
Dungmaed	1271	16014.6	183024	74734.8
Khar	1577	19870.2	227088	92727.6
Nanong	2123	26749.8	305712	124832.4
Norboogang	6786	85503.6	977184	399016.8
Shumer	5295	66717	762480	311346
Yurung	1128	14212.8	162432	66326.4
Zobel	1734	21848.4	249696	101959.2
Total	23632	297763.2	3403008	1389561.6

8. CHALLENGES AND WAY FORWARD

The sector has been facing lots of challenges during service delivery which have been reflected below:

- ❖ Due to a dearth of the budget, the sector could not conduct awareness and training for the unreached people. As a result, some technologies were not able to impart to that unreached section of the people. Budget allocation has to be considered in the coming financial year to take up those technologies to the unreached people. Without frequent awareness, it would be difficult to convince the public and disseminate the technologies.
- ❖ Shortage of staff in the district has been a challenge for the sector. The vastness of the area and single staff in the gewog has attributed to not being able to cover the area and provide timely services. The need for additional staff in the field in some of the larger gewogs has been felt. Deployment of additional staff in larger gewog of Shumer and Nanong will enhance the service delivery and reduce the workload of the concerned gewog staff.
- ❖ There is a lack of budget for the animal health campaign. Budget allocation on vaccination and breeding campaign should be a priority in the coming financial year.
- ❖ Therefore, the need for enough budget allocation must be considered to have desirable results from the program.
- ❖ The late supply of the inputs also contributed to the late completion of the livestock sheds and farms. Improving indenting services can resolve the delay of livestock projects and farms.
- ❖ Dilution of the program without focus on supplying input has also resulted in not being able to achieve the desired outputs. Therefore, A focus-oriented program is proposed to have an expected output.
- ❖ Delay submission of the report by some of the gewog in charge is a concern despite datelines and reminders. This can be resolved through administrative action if needed.
- ❖ Inbreeding in dairy was observed in some of the gewogs. To rectify the lapses, the bulls will be relocated to far-flung villages where there is no reach of Artificial Insemination.

- ❖ Pouch pasteurized milk production is an option to replace imported packaged milk. This is the way forward to replace imported packaged milk. Improved dairy product packaging can increase the shelf life and has the potential to earn extra income in the process.
- ❖ Native poultry production has to go on along with commercial egg production as the former has an advantage over sustainability and climate resilience. While it can reach the unreached populace.
- ❖ Small egg tray processing plant in the Dzongkhag can be useful for the poultry farmers in the Dzongkhag and Mozzarella cheese production has huge potential in the district.
- ❖ Without Proper Dzongkhag Veterinary Hospital (DVH) in the Dzongkhag, the need for construction of new DVH in 13th FYP is instrumental for improving service delivery.

9. Conclusion

The year 2021-2022 was yet another successful year with lots of tangible impacts and development in the field. The major achievement includes two commercial Piggery farms that can address the pork and piglet shortages in the district over the coming years.

The establishment of a one-unit Milk Processing Unit at Tsatshi Under Nanong gewog has been able to meet the dairy product demand while excess production is also marketed to other dzongkhags. While Commercial fish farming at Shumer gewog is due for harvest at the end of November Month 2022. While the district has been able to meet the egg demand and is self-sufficient in dairy products. The self-sufficiency in dairy products is a result of cattle sourcing by the Dairy groups. The usage of sex-sorted semen has increased the total improved cattle in the district. Overall, the contribution of the CAIT has been instrumental in the breeding program. While the farmer's mindset has to be changed from subsistence to semi-commercial farming wherein, farmers are encouraged to own better breeds of cows through insourcing. Farmers have started rearing a higher number of productive livestock (Pigs, Cows, Poultry). Most dairy farmers have chaff cutter machine to ease dairy farming and the Cost sharing Mechanism have been introduced to benefit the farmers at large.

The livestock staff has put lots of effort to make self-sufficiency in livestock products and today the Dzongkhag is self-sufficient in egg and dairy products. While self-sufficiency in pork is in line. The chicken production in the district is expected to meet the chicken demand in the Dzongkhag. The fodder resources in the district have been enriched by two folds and there will be an increase in milk production in winter unlike in the past when the milk production drops drastically in the winter as a lack of green grass and fodder. Forty-Two cows and Heifers were supported at Borangma and Khenadang rehabilitation villages to boost milk production. The progress of the sector has improved as a result of DVH Ambulance which enhanced the service delivery. Timely interventions were provided to the service user and eventually emergency outcalls and input delivery has been delivered to the farmers.

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