Press Release

The National Statistic Bureau released the Integrated Agriculture and Livestock Census of Bhutan 2023 report on 9th July 2024, available at www.nsb.gov.bt .

In spite of the various challenges faced by the agriculture and livestock sector, in the form of uncertain weather conditions as predicted by National Centre for Hydrology and Meteorology, instances of chili blight, fall armyworm, human wildlife conflict, unprecedented animal diseases (African swine fever, bird flu, lumpy skin disease) in 2023, the overall performance of the sector was satisfactory.

In agriculture, potato and fruit production increased while paddy, maize, vegetables and cardamom reported slight reduction.

Similarly, livestock reported an increase in dairy, meat and honey production while egg production declined by about 15 % in 2023.

A brief analyses of increase/decrease production of selected commodities in 2023 is presented below:

1. Paddy

In 2023, a total of 40,804 MT of paddy (40,563 MT of irrigated paddy and 241 MT of upland paddy) was harvested from 23,289.6 acres of agricultural land. This represents a slight drop (0.6 %) in production. The number of paddy growers also decreased from 23,327 in 2022 to 22,960 in 2023, while there was a slight increase in area under cultivation from 22,682.6 acres in 2022 to 23,289.6 acres in 2023 (Figure 1).

The slight decrease in paddy production can be attributed to the prevalence of dry spell and heat waves during the critical paddy growing season (June-August 2023), which delayed the transplantation and later affected the critical growth stages. For example, about 300 acres of paddy could not be cultivated on time in 2023 in Guma gewog of Punakha Dzongkhag.

Additionally, pest and disease infestations further contributed to the decline in production. For example, rice blast infestations were reported from Samdrup Jongkhar, Bumthang, Wangduephodrang, and Punakha. These combined factors significantly impacted the overall production of paddy

However, paddy production in 2024 is expected to increase with construction of 35 irrigation schemes covering 6,785 acres of land with a total length of 264 km, benefiting 3,455 households during 2022-2023 fiscal year. For instance, the recently inaugurated 38-kilometer climate-resilient Phangyul irrigation scheme at Wangdue Phodrang which is expected to benefit 285 households in Phangyuel and Kazhi Gewogs with a combined landholding of over 1,300 acres. In the same period, 1060 acres of land was brought under sustainable land development and 91 acres of fallow land was reverted to cultivation. In addition, 87 km of chain link fencing covering an area of 3,012 acres in 19 Dzongkhags was constructed to mitigate crop loss due to wild animals, including 1071 acres of paddy field. For instance, the 6.8-km chainlink fencing under Singye Gewog of Sarpang Dzongkhag protected about 150 acres of wetland.

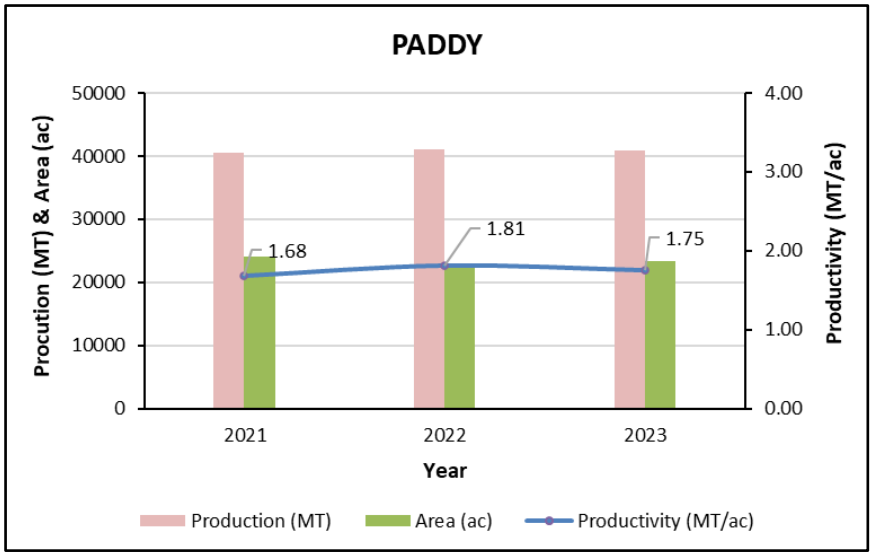


Figure 1. Paddy production, area and productivity from 2021-2023

2. Maize

In 2023, maize production was 25,118 MT, a reduction of 3% compared to 2022. The major maize-growing dzongkhags such as Dagana (731 MT less), Pemagatshel (600 MT less), Monggar (356 MT less), and Zhemgang (282 MT less) produced less as compared to 2022. The reduction is primarily due to a decrease in the cultivated area of maize (1,289 acres less as compared to 2022) resulting in fall in maize production by about 1890 MT. Besides, invasion of fall armyworm, which is prevalent in 15 Dzongkhags (Chukha, Punakha, Paro, Thimphu, Mongar, Dagana, Wangdiphodrang, Lhuentse, Sarpang, Trashigang, Trashi Yangtse, Samdrup Jongkhar, Tsirang, Zhemgang and Trongsa), has been one of the major causes of low maize production.

On the other hand, Sarpang (482 MT), and Tashigang (480 MT) reported higher production as compared to 2022.

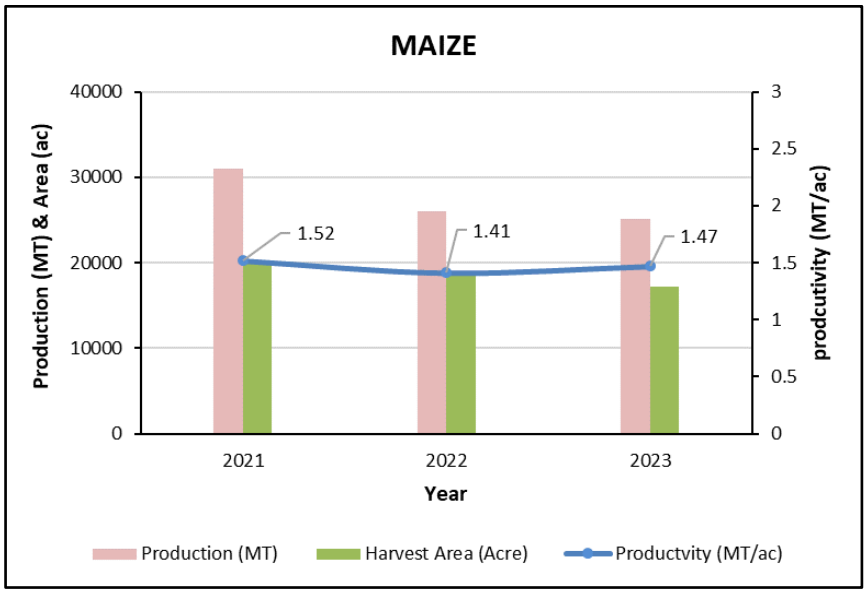


Figure 2. Maize production, area and productivity from 2021-2023

3. Minor Cereal

The production of minor cereals (quinoa, millet, buckwheat, barley) showed a 10-20 % reduction as compared to 2022, except for wheat which increased by 9%. The number of quinoa growers decreased from 331 in 2022 to 223 in 2023, area from 36 acres to 24 acres; millet grower decreased from 6400 to 6010 and area decreased from 1298 to 1160 acres; buckwheat grower decreased from 8706 to 7044 and area decreased from 2595 to 2343 acres. These decrease in the number of growers and cultivated areas have impacted the production of these crops due to challenges such as limited market demand, and low economic viability as compared to other lucrative crops.

The department will continue to support farmers producing minor cereals but more focus will be given to increase the production of rice, maize and high value cereals for food and nutritional security and those with market potential, given our limited resources. For instance, we plan to increase the quinoa production to 600 MT from current production of 12.8 MT, recognizing its nutritional benefits for enhancing food and nutrition security. We are working with the Ministry of Education and Skills Development to replace 5% of the rice requirement in central schools with quinoa and also exploring international markets for tricolor quinoa.

4. Potato and vegetables

Potato production increased by 21% from 31,145.61 MT in 2022 to 37,749.00 MT in 2023. This increase is attributed to seed replacement interventions, chain link fencing and timely facilitation of agro-chemicals, resulting in an increase of productivity from 3.9 MT/acre to 4.7 MT/acre. Out

of 3012 acres of agriculture field protected by chainlink, about 380 acres of vegetable and potato fields were fenced.

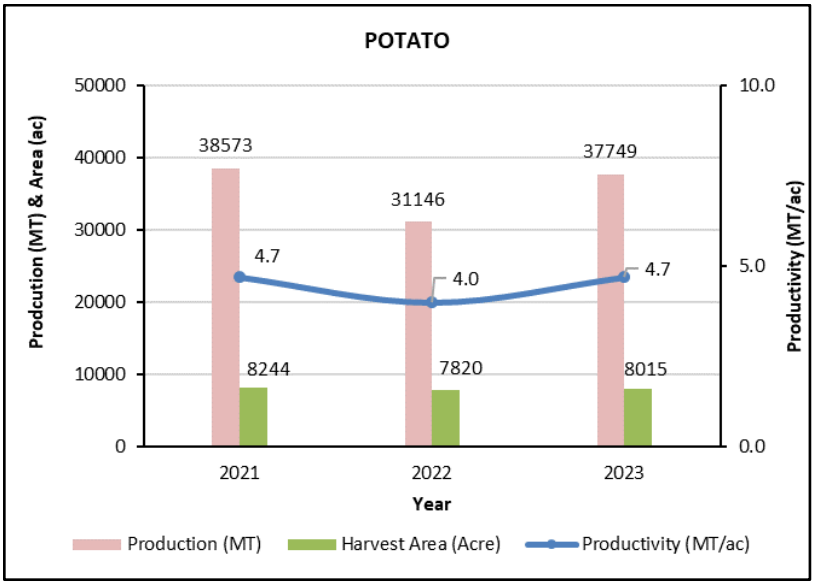


Figure 3. Potato production, area and productivity from 2021-2023

However, most vegetables showed a decline in production as compared to 2022 (Figure 4 & Table 1). For instance, chili production decreased by 12.76%, cauliflower by 11.13%, broccoli by 25.61%, and asparagus by 16.37%, while there had been a slight increase in tomato (0.29%), and carrot (20.14%) production as compared to 2022. In 2023, chili growers decreased from 44,954 to 42,685 and for broccoli, the number of growers decreased from 24,050 to 20,683. The decline in production is mainly due to the decrease in the number of growers and readily available cheap imported vegetables.

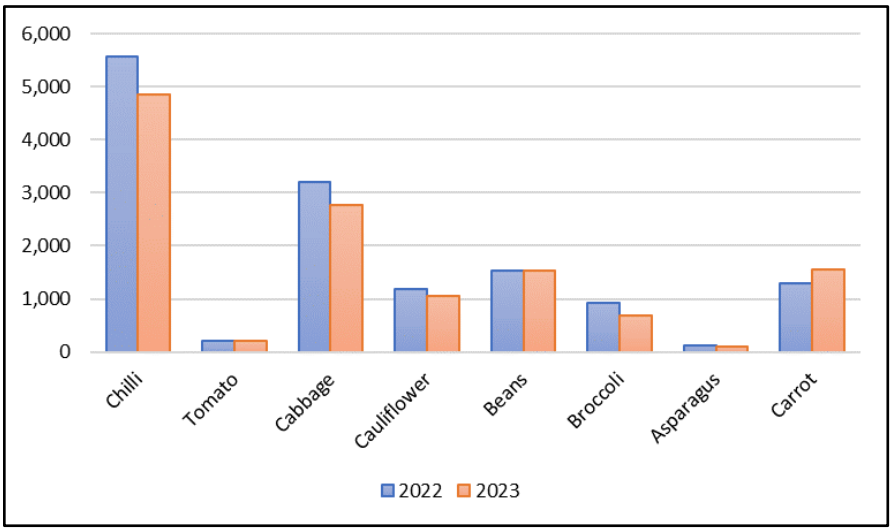


Figure 4. Comparison of different vegetable production (MT) in 2022 & 2023

Table 1. Vegetable production in 2022 & 2023 and percent change

Year	Chilli (MT)	Tomato (MT)	Cauliflower (MT)	Beans (MT)	Broccoli (MT)	Asparagus (MT)	Carrot (MT)
2022	5,557.39	205.63	1,196.16	1,533.28	916.81	115.65	1,300.42
2023	4,848.12	206.22	1,063.04	1,532.92	682.04	96.72	1,562.28
% Change	-12.76%	0.29%	-11.13%	-0.02%	-25.61%	-16.37%	20.14%

5. Fruits

In 2023, apple production increased by 4.2%, reaching 2317 MT compared to 2223 MT in 2022. Similarly, Mandarin production increased by 15% from 18,467 in 2022 MT to 21,170 MT in 2023. This trend of growth was also observed in other fruits like arecanut, kiwi, and dragon fruit as shown in Figure 5.

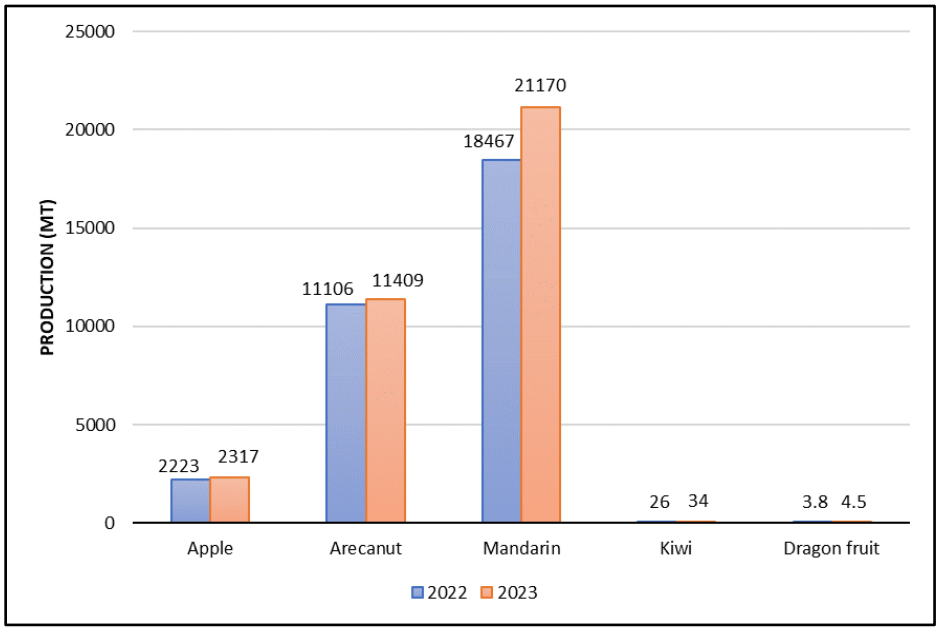


Figure 5. Comparison of different fruit production (MT) in 2022 & 2023

Table 2. Fruits production and number of tree in 2022 & 2023 and percent change

Year	Apple		Arecanut		Mandarin		Kiwi	Dragon fruit	
	Production (MT)	No. of trees	Production (MT)	No. of trees	Production (MT)	No. of trees	Production (MT)	Production (MT)	No. of trees
2022	2,223	119,688	11,106	1,415,779	18,467	714,250	26	4	1,040
2023	2,317	125,292	11,409	2,006,105	21,170	899,415	34	4	1,636
% Change	4%	5%	3%	42%	15%	26%	29%	20%	57%

Almost all categories of fruits reported an increase in total production. The increase in fruit production can be attributed to the Million Fruit Tree Plantation (MFTP) program initiated across the country in 2022. During the first phase of MFTP in 2022, approximately 1,014,785 fruit saplings were planted, followed by 1,010,100 saplings in the second phase in 2023. The third phase is currently ongoing, with about 190,500 temperate fruit trees already planted.

6. Cardamom

Cardamom production has been continuously declining over the past four years. In 2023, production dropped to 1104 MT, a 35% reduction from 1693 MT in 2022. This decrease is attributed to aging and declining cardamom orchards, senescence, and reduced vigor. Additionally, market price fluctuations (Nu. 1000 per kg in 2015, Nu. 450 per kg in 2021, Nu. 700 per kg in 2023) have discouraged farmers from planting more cardamom. Moving forward, the DoA is promoting the establishment of new orchards and evaluating small cardamom varieties to revive the industry.

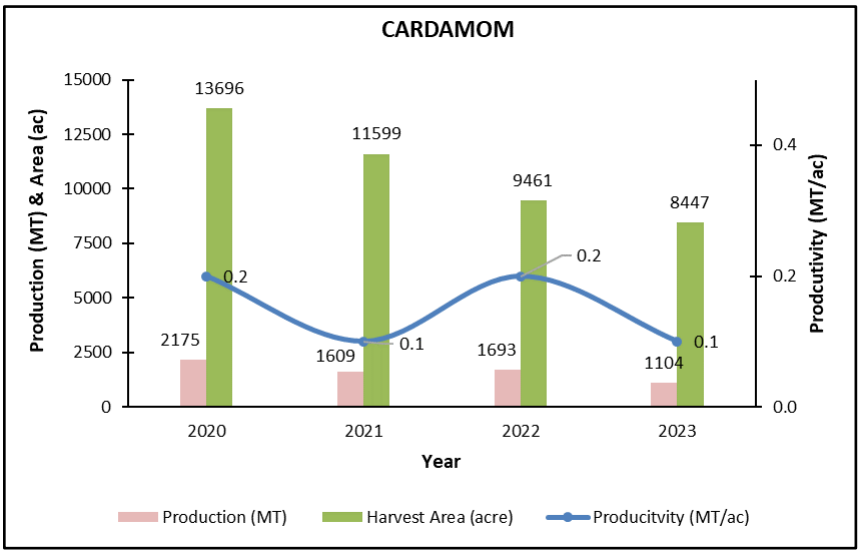
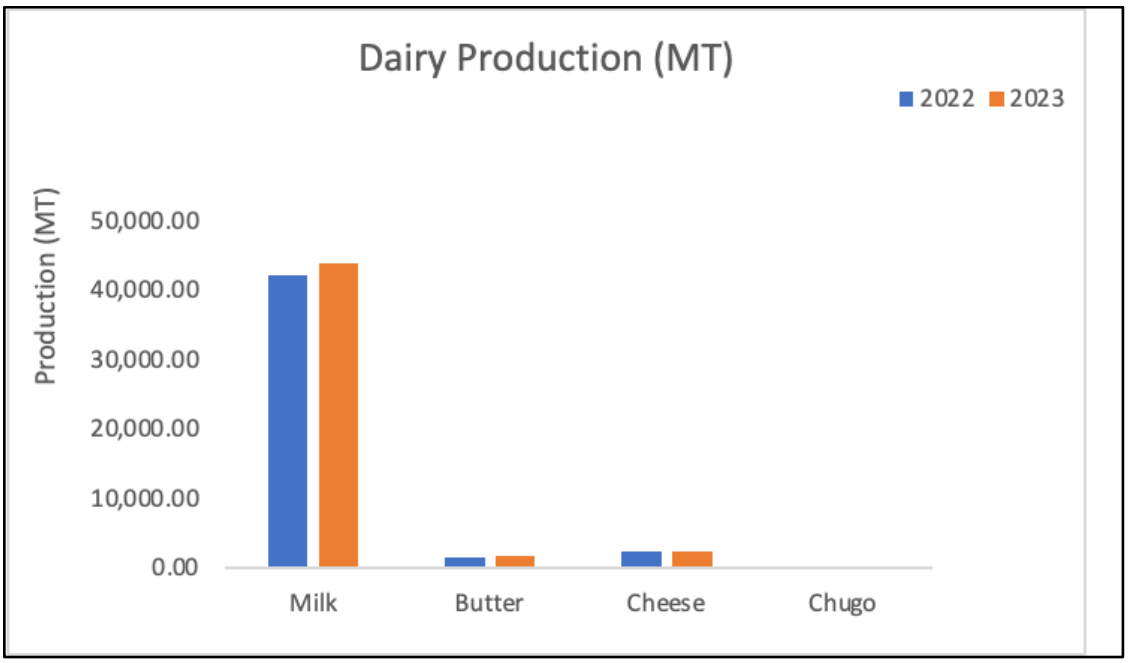


Figure 6. Cardamom production, area and productivity from 2020 - 2023

In 2023, despite encountering various challenges, particularly due to outbreaks of animal diseases such as African Swine Fever (ASF) in pigs, Lumpy Skin Disease (LSD) in cattle, and Infectious Bursal Disease (IBD) in poultry, the livestock sector has achieved notable progress in livestock production through strategic interventions and new initiatives.

1. Dairy products production

In 2023, dairy products saw an increase when compared to the previous year. The milk production increased by 4%, from 42,254.94 MT to 43,827.88 MT; butter production increased by 15%, from 1,508.12 MT to 1,727.46 MT; and Chugo production grew by 2%, from 129.63 MT to 132.00 MT. This growth can be attributed to the ongoing interventions such as dairy breed intensification programs, improved management practices, enhanced nutrition and animal health services and strengthening of farmers' institutions in the dairy sector. However, cheese production decreased slightly by 2%, dropping from 2,382.23 MT in 2022 to 2,326.27 MT in 2023. This decline can be primarily attributed to increased Chugo production and higher demand for buttermilk in the market, which is sold after extracting butter without further processing into cheese. However the sale of buttermilk is not captured in the IALC 2023 report.



Interventions undertaken to enhance dairy production:

During the fiscal year, a total of 71,653 liters of Liquid Nitrogen (LN2) was supplied to Artificial Insemination (AI) centers across all 20 Dzongkhags to support the dairy breed intensification program in the country. In order to ensure the preservation and effective use of bovine semen, which is crucial for the success of Artificial Insemination (AI) and the overall breed intensification

program, a total of 17,487 doses was produced locally while 10,000 doses of Progeny Tested/Genomic Selected (PT/GS) conventional semen and 1,261 doses of sex-sorted semen were imported amounting to an overall total of 28,748 doses. The introduction of sexed semen technology, as one of the advanced reproductive biotechnologies, aims to increase the milking cattle population in the country, since it has a probability of producing more than 90% female progenies.

2. Egg Production

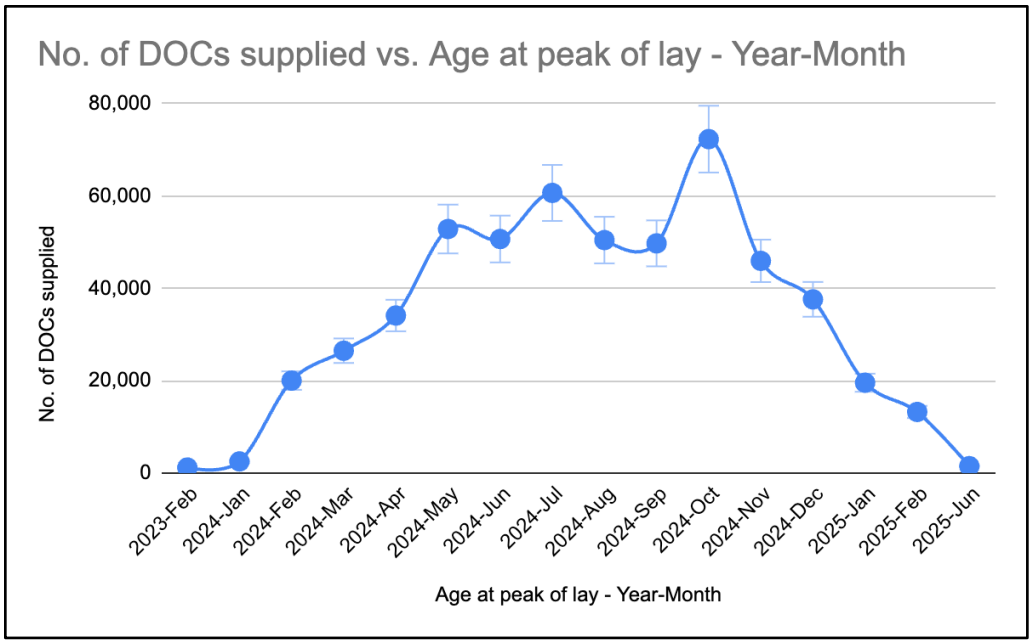
The table egg production in 2023 decreased to 85.69 million eggs, a 15% drop from the 101.04 million eggs produced in 2022 (IALC 2023). This decline was primarily due to the transition from BV-380 to Hy-line brown layer bird breeds during the early months of the 2023-24 fiscal year. Farmers preferred Hy-line brown due to issues with lower production and smaller egg sizes associated with BV-380, which had been introduced as an interim measure during the COVID-19 pandemic when imports of Hy-line brown Parent Stocks (PS) were disrupted.

The reintroduction of Hy-line brown led to a temporary reduction in production, as the newly distributed Day Old Chicks (DOCs) reached full production capacity only in the second quarter of the fiscal year. Additionally, the National Poultry Development Centre in Sarpang faced an unexpected outbreak of Infectious Bursal Disease (IBD) early in the 2022-23 fiscal year, necessitating disposal of PS, extensive disease containment and disinfection efforts which further impacted table egg production.

The disease outbreak led to the death of 2,012 PS, representing a 95% mortality rate, and required extensive containment and disinfection measures. This high mortality resulted in an estimated shortage of approximately 152,880 layer DOCs for farmers, resulting in an overall reduction of about 15 million table eggs in the market. Additionally, the farm remained closed for six months as downtime observation, further impacting table egg production.

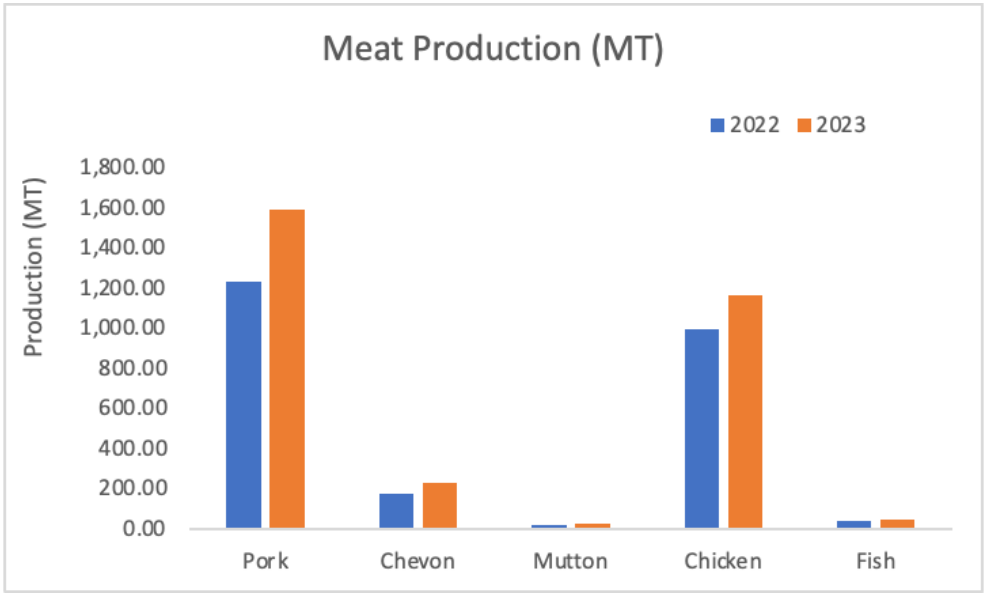
Interventions undertaken to enhance table egg production:

In 2023, to address the shortage of commercial DOCs requirement and boost table egg production, the three poultry input farms under Department of Livestock (DoL) produced and supplied 538,980 DOCs. These DOCs have already reached peak production from January 2024 to October 2024 as shown in the graph below. As a result, table egg production has already begun to increase with market stabilization which will be reflected in the IALC 2024.



3. Meat Production

Similarly, meat production has also increased in 2023 when compared to 2022. Pork production increased from 1,231.83 MT to 1,590.47 MT (29% surge); Chicken production increased by 17%, from 993.56 MT to 1,165.12 MT; fish production increased by 13%, from 36.52 MT to 43.26 MT; Chevon production increased by 33%, from 173.69 MT to 230.69 MT, and Mutton production increased by 17%, from 19.18 MT to 22.50 MT. The selective breeding, better nutrition, improved management practices, effective clinical veterinary services and disease management has contributed to increase in the overall meat production.



Interventions undertaken to enhance meat production:

Piglet production and distribution: In 2023, the country made notable progress in enhancing pork production and advancing piggery development, overcoming substantial challenges. A targeted distribution of 2,065 breeding piglets was strategically facilitated to piggery farmers across promising Dzongkhags by the three government nucleus farms. This initiative aimed to enhance pork production by ensuring a reliable supply of breeding and commercial fattening piglets and to improve the economic prospects of piggery farmers, providing avenues for increased income generation and fostering sustainable livelihoods.

Additionally, as part of the privatization initiative aimed at enhancing private sector participation in production and supply of piglets to fattening farmers and reducing the burden on government nucleus farms, over 400 Contract Pig Breeders (CPBs) were established over the past few years. In 2023, these CPBs produced and supplied 10,748 fattening piglets to the farmers for pork production

In the year 2023, the Department witnessed a notable increase in pork production, totaling 1,590.47 MT, which represents a substantial 29% rise from the 1,231.83 MT recorded in 2022 (IALC 2023).

Fingerling production and distribution: In 2023, a total of 1,654,527 fingerlings were produced and supplied to the farmers in the potential Dzongkhags for table fish production. These fingerlings were provided in two categories: Carp and Trout. Specifically, 1,583,657 Carp fingerlings and 20,870 Trout fingerlings were supplied to the farmers to enhance table fish production. The fish production for the year 2023 was recorded at 43.26 MT, marking a 13% increase from the 36.52 MT recorded in 2022 (IALC 2023).

4. Honey Production

Honey production has also increased by 12% compared to the previous year, from 37.26 MT in 2022 to 41.75 MT in 2023.

Expansion of Apiculture program: The increase in overall honey (blossom honey, pot honey, comb honey) production in 2023 is largely contributed by JSB-UNDP Project IV support. During the year, with the project support, the Department has implemented key activities such as procurement and supply of 187 full-fledged honeybee colonies *(Apis mellifera*), promotion of 250 numbers of Langstroth design flow hives technology (Australian flow hive), procurement and supply of bee feeds, essential beekeeping equipment and gears, capacity building of beekeepers on improved bee farming practices to enhance honey production in the country.