INTEGRATED AGRICULTURE AND LIVESTOCK CENSUS OF BHUTAN 2023

NATIONAL STATISTICS BUREAU
ROYAL GOVERNMENT OF BHUTAN

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FOREWORD

The National Statistics Bureau (NSB) is pleased to present the Integrated Agriculture and Livestock Census of Bhutan, 2023 (IALC 2023). This is the second time the NSB has conducted this census, following the transfer of responsibilities from the Ministry of Agriculture and Livestock in 2021. The report provides the results of the second integrated agriculture and livestock census, focusing on crop production and the livestock population and production across the country.

The main objective of the IALC 2023 is to collect comprehensive information on crop growers and livestock holders to support evidence-based decision-making at both national and local levels. The census includes data from both household and institutional farm holders. It provides key statistics on the location of crop growers, yield by crop type, and cultivated areas in the agriculture sector. It also includes the number of livestock holders, livestock population and production by type, and the geographical distribution of livestock holdings in the livestock sector.

The integrated census was conducted in all 20 dzongkhags, with support from 461 Tshogpas and 77 Tshogpa Ngotshabs who had a thorough understanding of local conditions in their respective gewogs and chiwogs. The enumeration took place from January 26 to March 15, 2024.

This report is expected to assist policymakers and relevant stakeholders by providing better insights and understanding of the overall agriculture and livestock situation, enabling the initiation of appropriate policy interventions from time to time. I extend my heartfelt appreciation to all Dasho Dzongdags, the staff of the NSB, Tshogpas of 205 Gewogs, and all respondents for their continued support and cooperation in the successful conduct of the census.

DIRECTOR GENERAL
National Statistics Bureau

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ACRONYMS

ARDCs	Agriculture Research Development Centres
ASD	Agricultural Statistics Division
BLDC	Bhutan Livestock Development Corporation
CAPI	Computer Assisted Personal Interviewing
DoA	Department of Agriculture
DoL	Department of Livestock
DSO	Dzongkhag Statistical Officer
FAO	Food and Agriculture Organization of the United Nations
FMCL	Farm Machinery Corporation Limited
GDP	Gross domestic product
HQ	Head quarters
LC	Livestock census
MT	Metric tonne
NMC	National Mushroom Centre
NSB	National Statistics Bureau
RGoB	Royal Government of Bhutan
ToE	Training of enumerators
WB	World Bank
WCA	World Programme for the Census of Agriculture

ACKNOWLEDGEMENT

Numerous agencies at both the national and local levels extended their fullest cooperation and support to the NSB for the successful conduct of the Integrated Agriculture and Livestock Census 2023. This endeavour required meticulous planning, administration, and monitoring of field operations, coordination, data processing, and logistical arrangements for 538 enumerators across 20 dzongkhags. The NSB would like to sincerely thank and express its deepest gratitude to all government agencies, and particularly to our farming population in rural areas who, despite their busy schedules, took the time to provide valuable information.

Our heartfelt thanks go to Dasho Dzongdas and their sector heads, officials of the Department of Local Governance & Disaster Management (DLGDM) under the Ministry of Home Affairs, the Department of Agriculture (DoA) and the Department of Livestock (DoL) under the Ministry of Agriculture and Livestock, the National Mushroom Centre, Cooperative farms, Dzongkhag Statistical Officers, and local governance officials, particularly the Tshogpas and Gewog Gups.

Without their unwavering support, it would not have been possible for the NSB to complete the second Integrated Agriculture and Livestock Census. We look forward to your continued support and cooperation in all our future censuses and surveys.

National Statistics Bureau
Thimphu

PRODUCTION AT A GLANCE

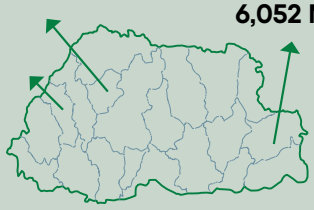
CROP PRODUCTION

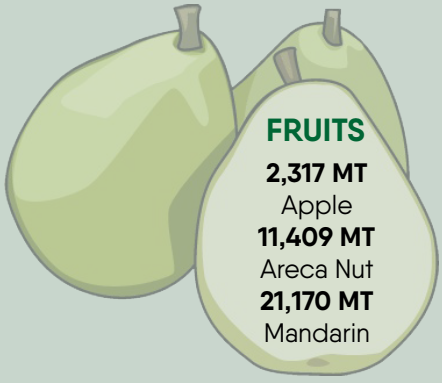
Top three CEREALS production Dzongkhag

Punakha
7,971 MT

Paro
7,352 MT

Trashigang
6,052 MT



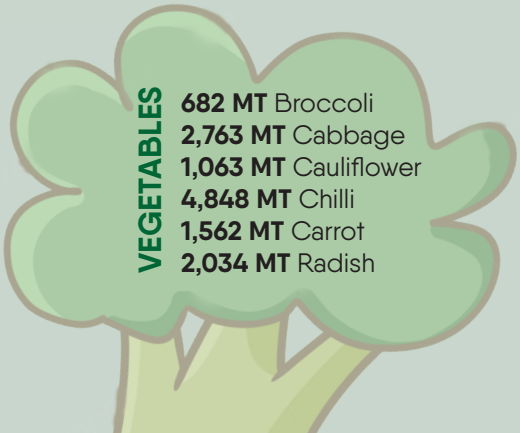


FRUITS

2,317 MT Apple
11,409 MT Areca Nut
21,170 MT Mandarin

CEREALS

40,804 MT **PADDY**
837 MT **WHEAT**
530 MT **MILLET**
25,118 MT **MAIZE**
518 MT **BARLEY**
966 MT **BUCKWHEAT**
13 MT **QUINOA**



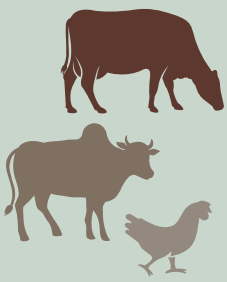
VEGETABLES

682 MT Broccoli
2,763 MT Cabbage
1,063 MT Cauliflower
4,848 MT Chilli
1,562 MT Carrot
2,034 MT Radish

LIVESTOCK PRODUCTION

51,544 Livestock holders
98% Household sector
(**50,583** holders)
2% non-household sector
(**961** holders)

Top three LIVESTOCK raised



Jersey cattle
(**23,477** holders)

Nublang-Thrabum
(**15,826** holders).

Poultry
(**19,607** holders)

OTHER

86 Million
EGGS

42 MT
HONEY

9 MT
WOOL

DAIRY

43,828 MT Milk

1,727 MT Butter

2,326 MT Cheese

CHAPTER 1: INTRODUCTION

1.1 Background

In many developing countries, crop and livestock production are the main sources of income and economic growth. In Bhutan, crop production and livestock accounted for 6.81 percent and 5.28 percent of GDP respectively in 2022. Rural households depend partially or entirely on these sectors for their livelihoods. Crop production and livestock rearing offer numerous benefits, including cash income from dairy and livestock sales, food security, manure for farming, and draft power for agricultural activities in rural areas of Bhutan.

For developing and implementing policies like food security programs, promoting economic growth, monitoring poverty reduction policies, and formulating effective agricultural investment strategies, accurate statistics on crop production and livestock are crucial.

Prior to 2021, livestock censuses were conducted by the Department of Livestock (DoL) and the RNR Statistics Division (RSD) under the Ministry of Agriculture and Forests.

In September 2021, the Prime Minister's Office issued an executive order transferring the mandate for conducting RNR censuses and surveys from the RSD to the National Statistics Bureau (NSB). Following this executive order, NSB established its Agricultural Statistics Division (ASD), and has since been responsible for conducting agriculture and livestock surveys at the national level.

The Integrated Agriculture and Livestock Census 2023 (IALC 2023) is the second such census conducted by the NSB. This census was carried out in close collaboration with the Dzongkhag Statistical Officers (DSOs) and with the support of the Tshogpas (Local Governance Members).

1.2 Census date and reference period

The IALC 2023 was conducted from January 26 to March 15, 2024. The reference date for census enumeration was December 31, 2023, with the entire year 2023 (January to December) serving as the reference period. Consequently, the IALC 2023 provides population data as of December 31, 2023, and production data for the year ending December 2023.

1.3 Objectives of the census

The primary objective of the integrated census is to assess the characteristics and performance of crop and livestock farming in the country. Additionally, the census is aimed to achieve the following specific objectives:

- Record and maintain reliable information on Bhutan's crop production and livestock population and production for the development and implementation of food security programs.
- Establish accurate and reliable data on

Bhutan's crop production, livestock population and production for planning and monitoring development programs.

- Collect information on crop and livestock indicators, such as annual crop production, livestock population, categorized by characteristics such as crop type and animal breed to aid in the development, promotion and monitoring of economic growth.

- Provide time series data on the crop production, and livestock population and production to support the development to support the formulation of sectoral investment strategies

1.4 Scope and coverage

The IALC 2023 was a complete enumeration covering all crop growers and livestock rearing households in the country. The following are the types of holding:

1.4.1 Permanent holders

These are holders in the household sector who permanently reside in the village and are involved either in crop production or livestock rearing. An example would be regular households in the village.

1.4.2 Temporary holders

Those holders temporarily residing in the village or are transient holdings involved in crop production or livestock rearing. This includes roadside workers and other temporary residents engaged in these activities.

1.4.3 Institutional holders

These include all non-household or commercial holdings, such as functional cooperatives/farmers' groups, schools, tshethar tshogpas, Dratshang and others involved in crop production or livestock rearing for any general or common purposes.

1.4.4 Government farms

This category includes state-owned enterprises and government established livestock farms aimed at supporting the development of the livestock sector by the Department of Livestock (DoL) under the Ministry of Agriculture and Livestock.

The state-owned enterprises involved are:

- National Cattle Breeding Centre, Bumthang
- Regional Poultry Breeding Centre, Paro
- National Sheep Farm, Bumthang
- Regional Centre for Aquaculture, SamdrupJongkhar
- National Mithun Breeding Centre, Samdrup Jongkhar
- Regional Cattle Breeding Centre, Wangkha
- National Piggery Development Centre, Sarpang
- Bhutan Sturgeon Farm, WangduePhodrang
- National Development Centre for Aquaculture, Sarpang
- National Research and Development Centre for Riverine and lake Fishery, Haa

- Regional Piggery and Poultry Breeding Centre, Monggar
- National Poultry Development Centre, Sarpang
- National Yak Farm, Haa
- Native Pig Breed Conservation Farm, Ramtokto
- National Nucleus Pig Breeding Centre, Yusipang

However, the IALC 2023 did not include holders practicing agriculture and rearing livestock in core urban areas.

1.5 Census preparation

In order to ensure data quality, the Integrated Agriculture and Livestock Census of Bhutan 2023 (IALC 2023) adhered to standard census methodologies and operations, including the World Programme for the Census of Agriculture (WCA) 2020 methodology of the Food and Agriculture Organization (FAO).

Pre-census activities began in early October 2023, and the main census was conducted from January 26 to March 15, 2024. This extensive effort involved meticulous planning, administration, and monitoring of field operations, as well as coordination, data processing, and logistical arrangements for 538 enumerators across 20 dzongkhags.

1.5. 1 Stakeholder consultation

Several rounds of stakeholder consultations were held to finalize the questionnaire content, operational plan, administration procedures, implementation strategies and to secure support and cooperation of the stakeholder (Figure 1.1).

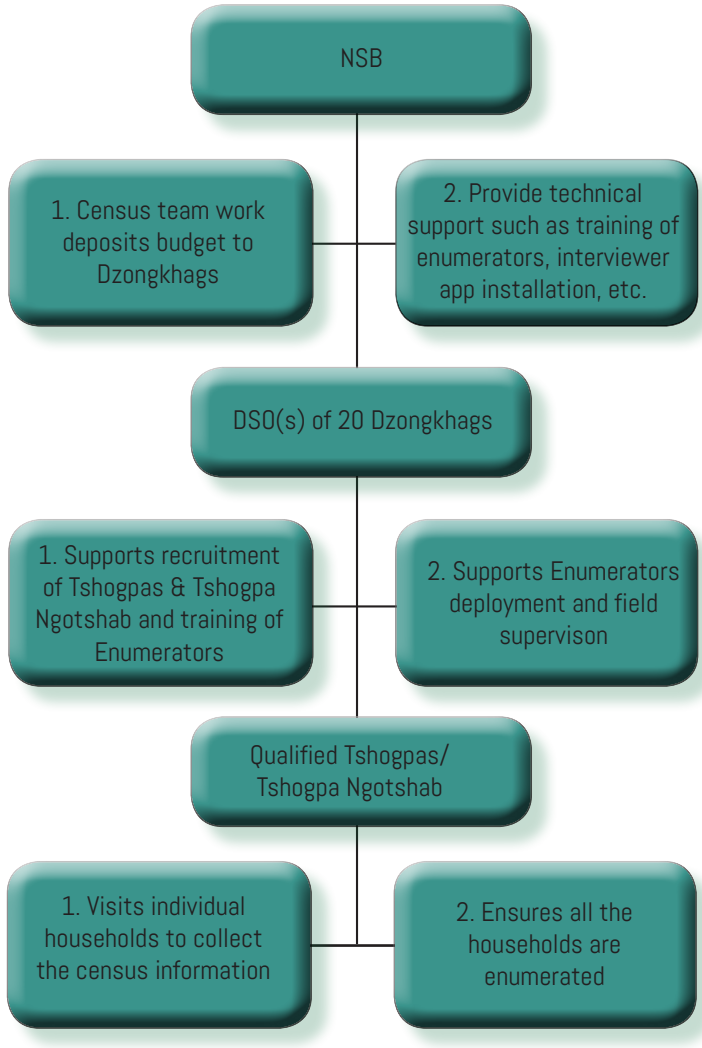


Figure 1.1: Census operational plan

1.5.2 Questionnaire design

The questionnaire for IALC 2023 was developed based on recommendations and feedback received from stakeholder consultations. The following are the core modules:

1.5.2.1 Module 1. Identification

This module captured basic information such as the name and location of crop grower/livestock holders, along with details about the type of holdings collected during the listing.

1.5.2.2 Module 2. Crop production

This module gathered data on the types of crops grown, including information on sown area, area loss and harvested production during the reference year.

1.5.2.3 Module 3. Livestock production

This module collected information on bovine livestock types, including head counts, breed types and deaths during the reference year. It also included data on fishponds, area covered and type of fish raised as well as information on beekeeping by hive type, honey production, and other livestock products such as dairy, meat, eggs and wool.

1.5.3 Data capture methodology

The Survey Solution platform was used to capture data from respondents. This platform enabled survey administrators to design questionnaires, deploy them electronically to enumerators' devices, collect responses offline, and synchronize data back to the central server when an internet connection is available. This method of data collection and capture is called Computer Assisted Personal Interviewing (CAPI).

The digitized data collection included several consistency and data validation checks, such as automatic skip patterns. These skip patterns ensure that when certain questions need to be bypassed based on previous answers, the software automatically directs the enumerator to the next relevant question.

The extensive validation checks embedded in the digitized questionnaire helped enhance data quality by reducing errors in data entry and ensuring accurate responses. Additionally, specific instructions were provided for each question to assist enumerators and respondents in accurately addressing each query.

Following completion of field enumeration, the data was exported from survey solution platform to Stata for analysis.

1.5.4 Listing updates of permanent holders

The Tshogpas from 205 gewogs updated the lists of crop growers and livestock rearing households in their respective Dzongkhags. This frame was further reviewed and validated by the NSB for field enumeration.

1.5.5 Census method and operations

1.5.5.1. Recruitment and training

Based on the findings of the pre-test, the number of enumerators required for the successful conduct of the census was determined. A total of 577 field staff were involved in census enumeration. They were Tshogpas (461), Tshogpa Ngotshab (77), Dzongkhag Statistical Officers (20) and university graduates (19). The recruitment of these enumerators was overseen by Dzongkhag Statistical Officers (DSOs) in their respective dzongkhags.

Eight Master Trainers from the headquarters conducted the training of enumerators for the duration of three days per dzongkhag. It was done between January 22 and February 14, 2024.

Table 1.1: Number of Enumerators by Dzongkhag and Training date, 2024

Dzongkhag	No. of Tshogpas involved	No. of Tshogpa Ngotshab recruited	Total	Date of Training
Bumthang	8	1	9	22-24 January 2024
Chhukha	28	2	30	12 -14 February 2024
Dagana	41	3	44	3-5 February 2024
Gasa	4	2	6	3-5 February 2024
Haa	9	6	15	22-24 January 2024
Lhuentse	15	3	18	3-5 February 2024
Monggar	31	12	43	30 January-1 February 2024
Paro	31	3	34	26-28 January 2024
Pema Gatshel	19	6	25	22-24 January 2024
Punakha	18	6	24	3-5 February 2024
Samdrup Jongkhar	31	0	31	2-4 February 2024
Samtse	63	0	63	26-31 January 2024
Sarpang	31	3	34	6-8 February 2024
Thimphu	15	2	17	7-9 February 2024
Trashigang	26	7	33	26-28 January 2024
Trashi Yangtse	18	0	18	3-5 February 2024
Trongsa	9	2	11	22-24 January 2024
Tsirang	30	4	34	30 January-1 February 2024
Wangdue Phodrang	18	11	29	30 January -1 February 2024
Zhemgang	16	4	20	26-28 January 2024
Total	**461**	**77**	**538**	

1.6 Enumeration

The IALC 2023 was conducted between January 26 and March 15, 2024.

The Dzongkhag Statistical Officers (DSOs) supervised the field enumeration in its entirety. The enumerators assigned to specific chiwog carried out the field enumeration. The dashboard managers at headquarters (HQ) were responsible for assigning questionnaires to the field teams and checking the quality of data collected. They also validated the data received from the field.

1.7 Data processing phase

1.7.1 Data compilation and consolidation

After the data was collected from the field, it was exported in Stata format, and stored for subsequent cleaning and validation..

1.7.2 Data validation and editing

The dashboard managers validated the data and checked for its inconsistency. Any missing, incomplete, or inconsistent responses were rejected. Enumerators were asked to contact the households to correct the errors and resubmit the corrected questionnaire. This process was repeated as necessary until the data was accurate.

1.8 Analysis and report writing

The data analysis and tabulation were done using Stata. The census data on core topics were tabulated and presented by Dzongkhag, the type of crops/livestock at Dzongkhag level.
The report was prepared by a team of subject matter experts from within the ASD.

1.9 Census data quality assurance

Data quality is paramount for ensuring the accuracy, relevance, reliability, and validity of results. The census team implemented several measures to support best practices in data collection to minimize errors.

Further, in order to ensure data quality, utmost attention was laid throughout the census operation; from the development of questionnaire, manuals, standardization of training of enumerators, monitoring of the field work, data processing operation to data tabulation and report writing.

Several stakeholder consultations were carried out to discuss and review the content of the questionnaire. Adequate number of supervisors and enumerators was recruited to ensure the whole process was done in a desired manner.

The validation and consistency checks were built in the CAPI-questionnaire to help identify or prevent errors in responses and data entries.

Moreover, the completed household questionnaires were further verified and validated by the dashboard managers at the HQ. Wherever required, the census team randomly made telephonic calls to the crop growers and livestock rearing households to validate the data collected.

1.10 Cost of census data collection

The costs of data collection significantly impact the quality of data. For the IALC 2023, data collection costs were estimated based on several factors, including the number of field staff (enumerators and supervisors), training duration, the expected number of interviews per day per enumerator, and the cost of other census activities. The total expenditure for the IALC 2023 was approximately Nu. 14.67 million (Table 1.2).

1.10.1 Cost of Enumeration

The cost of enumeration included daily subsistence allowance (DSA) paid to enumerators during the training of enumerators (ToE) and field data collection. Tshogpas and Tshogpa Ngotshabs, were paid Nu. 1000 per day for the duration of field data collection. Additionally, a one-time voucher allowance of Nu. 1,000 was provided to enumerators for communication with the Dashboard Managers at HQ and respondents to address any data inconsistencies.

1.10.2 Associated cost of NSB HQ

In addition to enumeration costs, several other expenses were incurred, including stakeholder consultations for drafting the questionnaires and providing master trainers training at the HQ. Another significant expense was field monitoring by the NSB census staff to ensure data quality.

1.11 Measures taken to reduce data collection costs

The cost of data collection was estimated based on several parameters. For instance, using data from the pre-test, the NSB determined that each enumerator could survey an average of six to eight households daily.

To minimize cost, several steps were taken. One key measure was the use of local enumerators. By recruiting enumerators from within their gewogs, the cost of transportation, and other logistics were significantly reduced.

Table 1.2: Cost of enumeration by Dzongkhag, 2024

Dzongkhag	Expenditure (Nu.)
Bumthang	353,751.00
Chhukha	784,945.00
Dagana	1,350,803.00
Gasa	165,481.00
Haa	470,000.00
Lhuentse	487,642.00
Monggar	1,118,333.00
Paro	718,552.00
Pema Gatshel	625,526.00
Punakha	662,007.00
Samdrup Jongkhar	863,576.00
Samtse	1,892,697.00
Sarpang	955,934.00
Thimphu	459,383.00
Trashigang	1,105,258.00
Trashi Yangtse	518,648.00
Trongsa	362,445.00
Tsirang	647,312.00
Wangdue Phodrang	653,661.00
Zhemgang	471,083.00
Total	**14,667,037.00**

1.12 Type of agricultural holdings

In many countries, agricultural holdings are divided into two subpopulations:

- holdings in the non-household sector (commercial holdings) and
- holdings in the household sector (holdings run by households or individuals).

An agricultural holding is defined as an economic unit under single management, comprising all livestock kept and all land used wholly or partly for agriculture production purposes, regardless of the ownership (WCA 2020). In developing countries, the majority of holdings are in the household sector, predominantly run by families.

According to the IALC 2023 results for Bhutan, about 69,008 agricultural holdings were recorded in the census. Table 1.3 indicates that the household sector overwhelmingly dominates, accounting for 96 percent of holdings, while the non-household sector is negligible (4 percent). The household sector in Bhutan includes permanent or regular households that grow crops or rear livestock for their own consumption or sale.

The non-household sector includes private commercial farms, agricultural groups or cooperatives, schools, institutions, monasteries, Tshethar Tshogpa, Milk Processing Units (MPUs), and other entities. These entities lease land from the government or community, share labor, market produce for joint profit, and may employ caretakers or managers. The 'others' category includes holdings like kukhor-owned holdings managed by caretakers.

Table 1.3: Agricultural holding by type and Dzongkhag

Dzongkhag	Household sector	Non-household sector	Total
Bumthang	1,351	40	1,391
Chhukha	4,485	219	4,704
Dagana	4,741	266	5,007
Gasa	582	2	584
Haa	1,190	18	1,208
Lhuentse	1,901	60	1,961
Monggar	5,133	109	5,242
Paro	3,285	246	3,531
Pema Gatshel	3,097	57	3,154
Punakha	2,526	135	2,661
Samdrup Jongkhar	4,039	93	4,132
Samtse	9,894	220	10,114
Sarpang	4,697	189	4,886
Thimphu	1,271	415	1,686
Trashigang	5,687	79	5,766
Trashi Yangtse	2,234	89	2,323
Trongsa	1,469	58	1,527
Tsirang	3,679	67	3,746
Wangdue Phodrang	3,174	175	3,349
Zhemgang	2,005	31	2,036
Total	**66,440**	**2,568**	**69,008**

1.13 Structure of the report

The census report consists of four chapters. The introductory chapter provides a general overview of the integrated census, including its objectives, scope, and coverage. It details the methodological and operational procedures used, offering readers a comprehensive understanding of how the census results were obtained and how they should be interpreted.

This chapter also covers stakeholder participation, questionnaire design, data collection and capture, pre-census listing operations, training of enumerators and supervisors, census enumeration, data processing (including data compilation, consolidation, validation and editing), tabulation, analysis and report writing.

Chapters two to four delve into the specific subject matter of the census. Chapter two presents the statistics on crop production by various crop types. Chapter three describes the livestock population, including herd structure and dynamics. It provides the count of animals by type on census day, and the number of animals that exited the population through death during the reference year. Additionally, it includes information on calves under one year old to track newborn bovine livestock during 2023.

Chapter four presents data on the production of livestock such as dairy, meat, eggs, honey and wool. It also includes information on apiculture and aquaculture, detailing the numbers of bee farmers, types of beehives, fish farmers and fish production. Notably, apiculture, or bee farming, has seen significant growth in Bhutan in recent years.

The report concludes with annexes that include detailed statistical tables and the census questionnaire.

CHAPTER 2: CROP PRODUCTION

2.1 Cereals

The Integrated Agriculture and Livestock Census 2023 was conducted following the World Programme for the Census of Agriculture 2020 (WCA 2020) of the Food and Agriculture Organization (FAO). FAO categorizes wheat, rice paddy, barley, maize, popcorn, rye, oats, millet, sorghum, buckwheat, quinoa, fonio, triticale, canary seed, and mixed grain as cereals.

In Bhutan, core cereal crops grown by small agricultural holders are paddy, maize, wheat, barley, buckwheat, millet, and quinoa. This chapter focuses on crop production, including area under cultivation for these major cereals and other crops by Dzongkhag.

All Crop Production, other than paddy and maize, are the actual production reported by the agriculture holders during the census reference year. ***The production of paddy and maize was estimated by multiplying the harvest area of the holding, as reported in the census, by the crop cut yield of the respective gewogs received from the Ministry of Agriculture and Livestock (MoAL). The area harvested by the households is calculated as the sown area minus the crop area lost] * crop cut yield of the gewog)*** All crop production, other than paddy and maize, refers to the actual production from the field during the census reference period and are presented in metric tonnes (MT). The harvested area is given in acres.

The production of main cereals recorded 68,786 MT in 2023, which is a decrease of 2% from 70,168 MT in 2022. Table 2.1 shows the production of the main cereals by type in 2023.

Punakha, Paro and Trashigang are the highest cereals producing Dzongkhags. Punakha dzongkhag harvested 7,971 MT, while Paro and Trashigang harvested 7,352 MT and 6,052 MT respectively in 2023 (Map 2.1). These three Dzongkhags accounted for 30 percent of the total major cereals production in 2023.

As shown in Map 2.1, Dzongkhags such as Punakha, Paro, Wangdue Phodrang, Samtse, Sarpang, Dagana and Trongsa are dominant in the paddy production while Trashigang, Monggar, Pema Gatshel and Tsirang are dominant in the maize production.

2.1.1 Paddy

Among the cereal crops, paddy is the most widely grown cereal crop in the country. In 2023, 40,563 MT (Table 2.2) of the irrigated paddy and 241 MT of the upland paddy were harvested. This represents a slight drop in production by 0.5 percent (182 MT) and 0.2 percent (63 MT) respectively when compared to 2022.
Punakha dzongkhag harvested 7,761 MT of irrigated paddy, recording a decrease of 299 MT as compared to 2022. While Paro dzongkhag harvested 7,024 MT (820 MT more than in 2022) and Wangdue Phodrang harvested 4,449 MT (66 MT less

than in 2022). Punakha (19 percent), Paro (17 percent) and Wangdue Phodrang (11 percent) dzongkhag accounted for the highest production of irrigated paddy in 2023 (Figure 2.1). The production shares of the rest of Dzongkhags which were less than 5 percent are not shown in the figure.

Table 2.1: Cereals production by type

Cereals Type	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Paddy (Irrigated)	24,206.06	22,984.72	40,562.65
Paddy (Upland)	350.78	304.87	241.36
Maize	21,030.77	17,140.71	25,118.22
Wheat	2,002.10	1,805.34	837.01
Barley	1,276.54	1,143.30	518.13
Millet	1,283.83	1,160.35	530.26
Buckwheat	2,699.37	2,342.58	965.51
Quinoa	28.28	23.65	12.87
Total	**52,877.72**	**46,905.53**	**68,786.01**

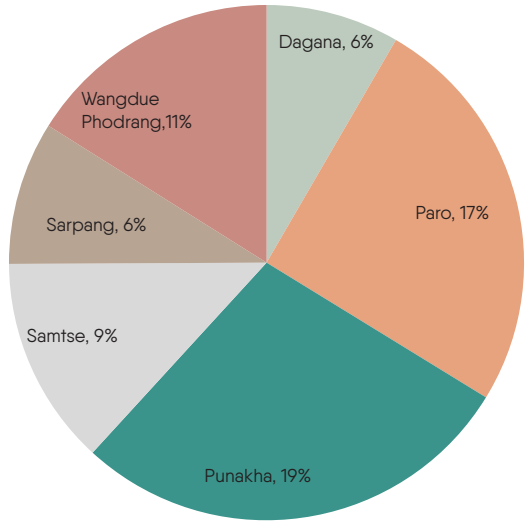
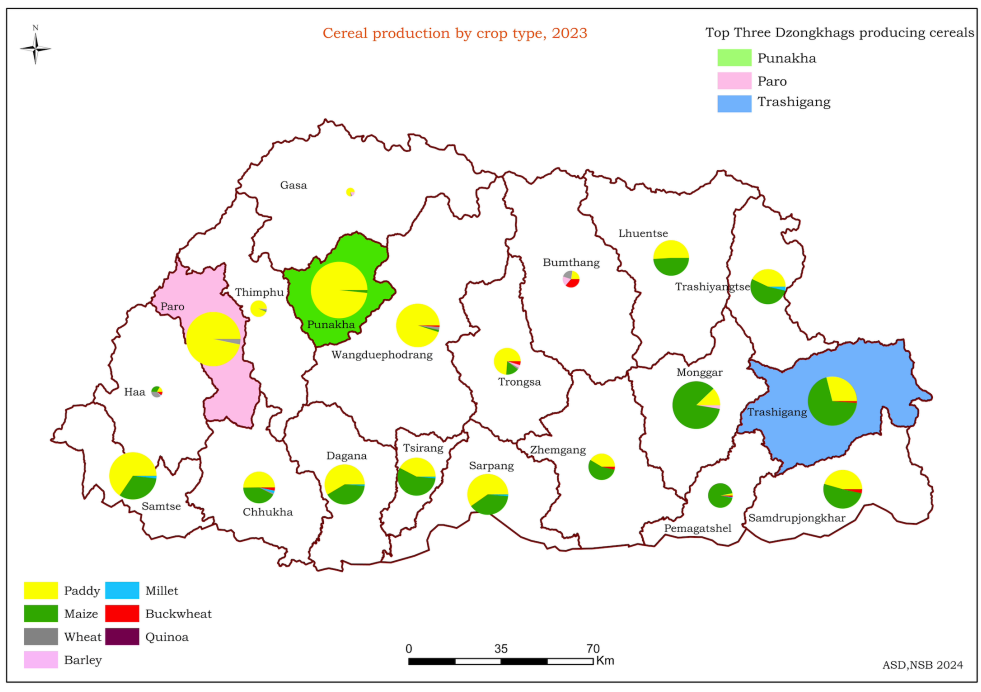


Figure 2.1: Production share of irrigated paddy by major producing Dzongkhags



Map 2.1: Share of cereals production by Dzongkhag and by crop type

Table 2.2: Irrigated paddy production by Dzongkhag and FMCL

Dzongkhag	Number of Grower	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	120	107.28	103.73	159.14
Chhukha	938	817.75	767.02	1,256.55
Dagana	1,533	1,793.12	1,623.35	2,318.33
Gasa	106	101.09	99.16	137.61
Haa	48	47.14	39.54	51.62
Lhuentse	1,093	1,005.43	973.70	1,600.04
Monggar	1,193	587.05	543.35	680.08
Paro	1,964	2,617.81	2,599.35	7,024.03
Pema Gatshel	48	31.39	30.37	44.95
Punakha	2,272	3,803.81	3,685.03	7,760.55
Samdrup Jongkhar	775	1,383.40	1,306.13	1,692.61
Samtse	2,776	2,874.00	2,736.29	3,631.04
Sarpang	1216	1,850.39	1,768.05	2,491.76
Thimphu	299	257.58	243.85	634.51
Trashigang	1,752	936.65	894.25	1,722.51
Trashi Yangtse	1,195	721.64	682.07	1,318.96
Trongsa	943	870.40	816.74	1,309.63
Tsirang	1,188	1,360.78	1,234.50	1,521.16
Wangdue Phodrang	1,712	2,274.25	2,141.49	4,449.49
Zhemgang	720	671.43	603.08	708.95
FMCL	-	93.70	93.70	49.14
Total	**21,891**	**24,206.06**	**22,984.72**	**40,562.65**

The harvested area has increased from 22,683 acres in 2022 to 23,290 acres in 2023 (1.3 percent increase compared to 2022). In terms of paddy growers, it has decreased from 23,327 holders in 2022 to 22,960 holders in 2023, an equivalent drop of 2 percent than in 2022 (Figure 2.3).

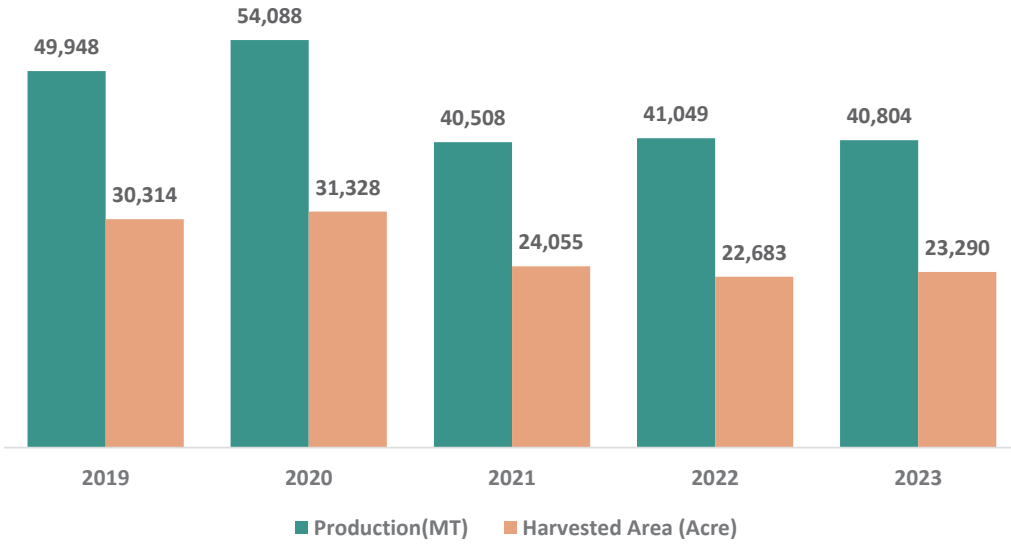


Figure 2.2: Production and harvested area of paddy from 2019-2023

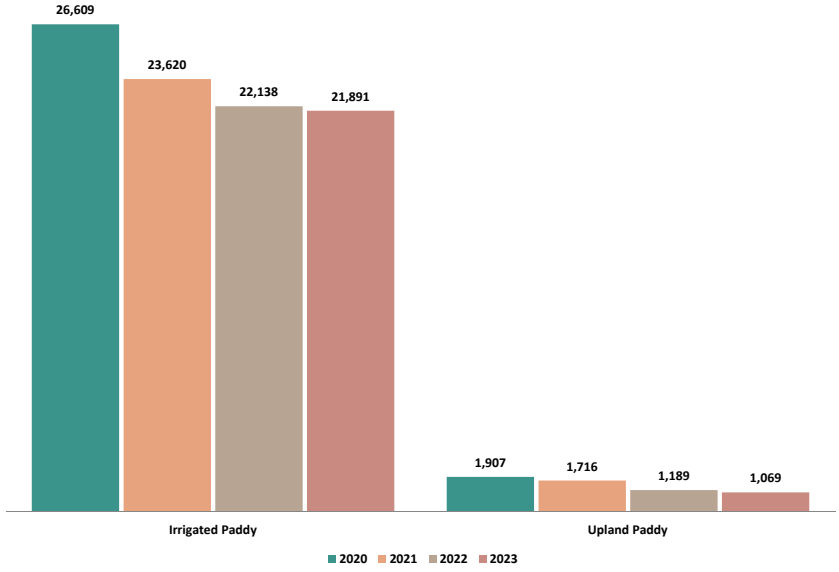


Figure 2.3: Paddy growers from 2020-2023

Table 2.3: Upland paddy production by Dzongkhag

Dzongkhag	Number of Grower	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	4	1.35	0.45	0.01
Chhukha	35	7.68	6.24	3.46
Dagana	74	46.05	36.12	23.83
Gasa	-	-	-	-
Haa	3	0.07	0.07	0.05
Lhuentse	123	46.87	45.45	48.60
Monggar	104	21.77	18.14	10.91
Paro	-	-	-	-
Pema Gatshel	60	18.30	12.75	5.11
Punakha	22	7.60	7.22	4.93
Samdrup Jongkhar	42	18.45	17.10	11.21
Samtse	39	9.60	9.54	7.56
Sarpang	15	6.58	6.26	5.85
Thimphu	-	-	-	-
Trashigang	185	57.20	52.57	46.72
Trashi Yangtse	222	52.00	44.40	44.56
Trongsa	10	5.88	4.80	4.14
Tsirang	9	2.17	1.90	2.19
Wangdue Phodrang	23	7.84	7.19	5.42
Zhemgang	99	41.38	34.68	16.81
Total	**1069**	**350.78**	**304.87**	**241.36**

2.1.2 Maize

Maize, another major cereal crop grown in the country, reported a production of 25,118 MT in 2023 (Table 2.4). This was 863 MT less compared to the 2022 production, equivalent to a 3 percent decline, and 21,117 MT less than the 46,235 MT recorded in 2019.

In 2023, the major maize growing Dzongkhags, – Monggar produced 4,777 MT (356 MT less compared to 2022), Tsirang produced 2,022 MT (5 MT less compared to 2022) and Trashigang produced 4,158 MT (480 MT more compared to 2022). Monggar (19 percent), Trashigang (17 percent) and Tsirang (8 percent) dzongkhags accounted for the highest production of maize in 2023 (Figure 2.4). Maize growers increased from 37,707 holders in 2022 to 38,456 holders in 2023, an equivalent increase of 2 percent than in 2022 (Figure 2.5).

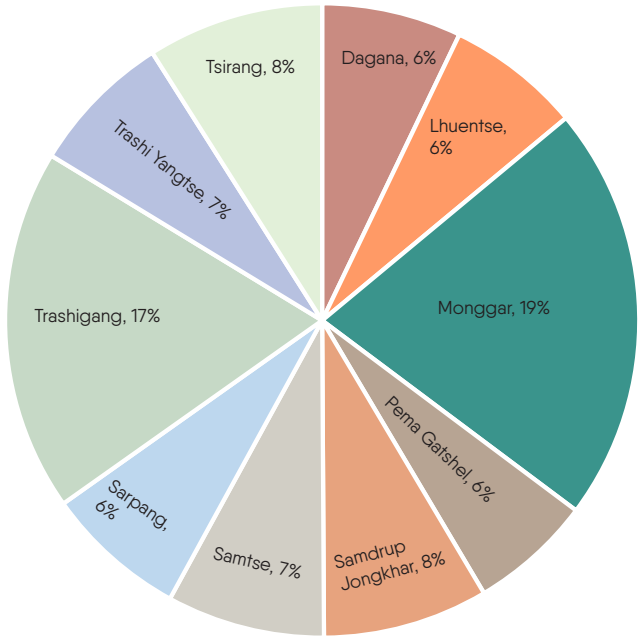


Figure 2.4: Production share of maize by major producing Dzongkhags

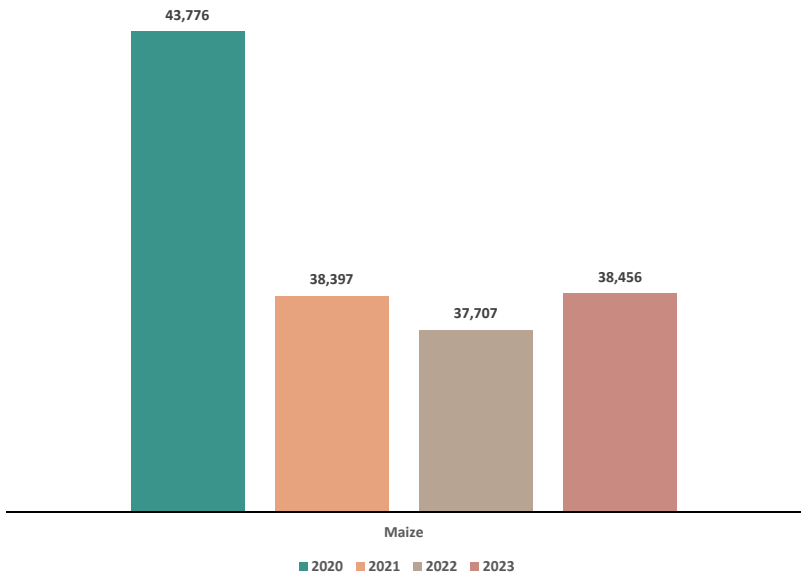


Figure 2.5: Maize growers from 2020-2023

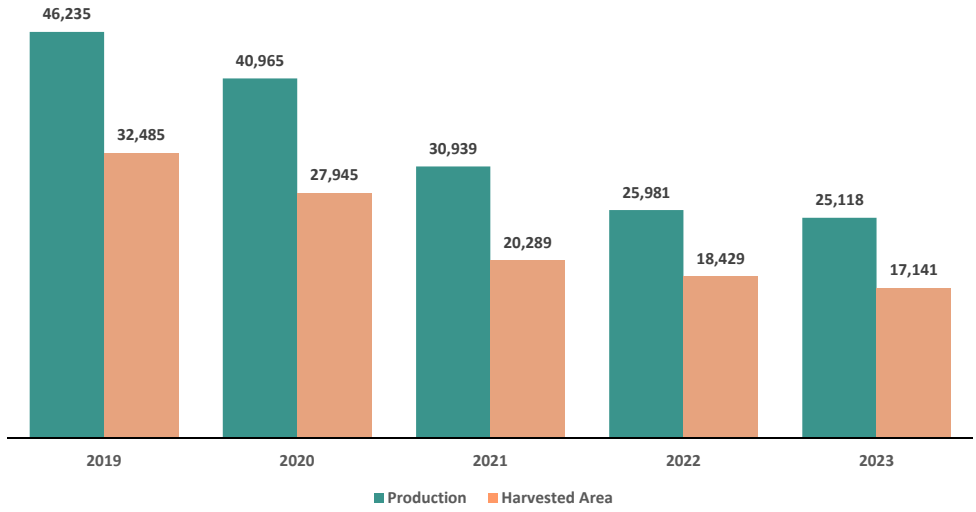


Figure 2.6: Production and harvested area of maize from 2019-2023

In terms of area, 21,031 acres of maize were cultivated in 2023. The harvest area for maize dropped by 1,288 acres compared to the 2022 harvest area.

Table 2.4: Maize production by Dzongkhag

Dzongkhag	Number of Grower	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	17	1.71	1.26	0.91
Chhukha	2,738	1,026.45	867.89	1, 059.87
Dagana	3,011	2,209.42	1,605.62	1,601.20
Gasa	3	0.39	0.39	0.29
Haa	329	105.61	87.42	100.90
Lhuentse	1,615	941.56	867.64	1,538.70
Monggar	4,754	4,787.75	3,958.46	4,776.88
Paro	286	22.68	20.68	44.53
Pema Gatshel	2,462	1,122.93	967.45	1,404.98
Punakha	308	101.10	83.53	128.84
Samdrup Jongkhar	2,866	1,527.03	1,318.76	1,895.90
Samtse	5,772	1,606.41	1,324.13	1,812.67
Sarpang	2,120	901.77	612.81	1,624.95
Thimphu	296	9.27	6.68	9.39
Trashigang	4,745	2,317.10	1,995.22	4,157.85
Trashi Yangtse	1,878	842.79	708.40	1,641.27
Trongsa	598	240.72	180.36	278.62
Tsirang	3,052	2,112.66	1,645.15	2,022.43
Wangdue Phodrang	215	80.38	44.26	72.42
Zhemgang	1,391	1,073.06	844.60	945.61
Total	**38,456**	**21,030.77**	**17,140.71**	**25,118.22**

2.1.3 Wheat and Buckwheat

A total of 837 MT of wheat (Table 2.5) and 966 MT of buckwheat (Table 2.6) were harvested. Production of wheat increased by 67 MT while buckwheat dropped by 167 MT compared to 2022 production (Figure 2.7).

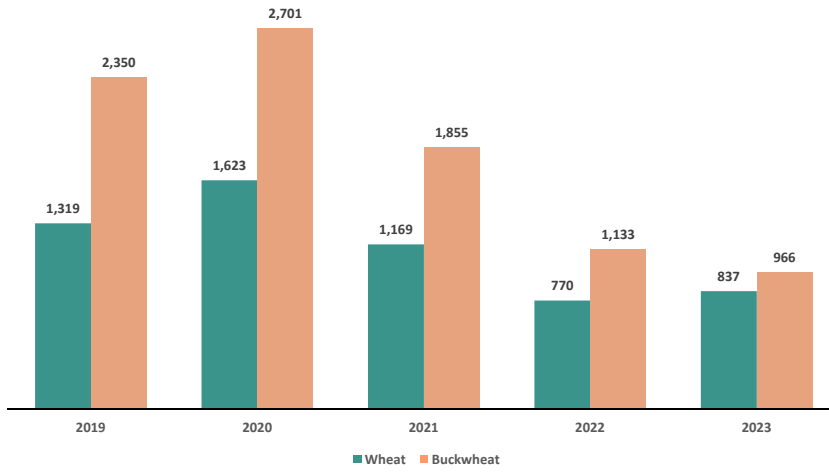


Figure 2.7: Wheat and buckwheat production from 2019-2023

Buckwheat production dropped in 2023 compared to 2022. This decline could be due to reduction in the cultivated or planted area for buckwheat, which dropped by 253 acres compared to 2022.

In terms of growers, buckwheat growers have also decreased over the years, whereas there was a slight increase in the number of wheat growers (Figure 2.8).

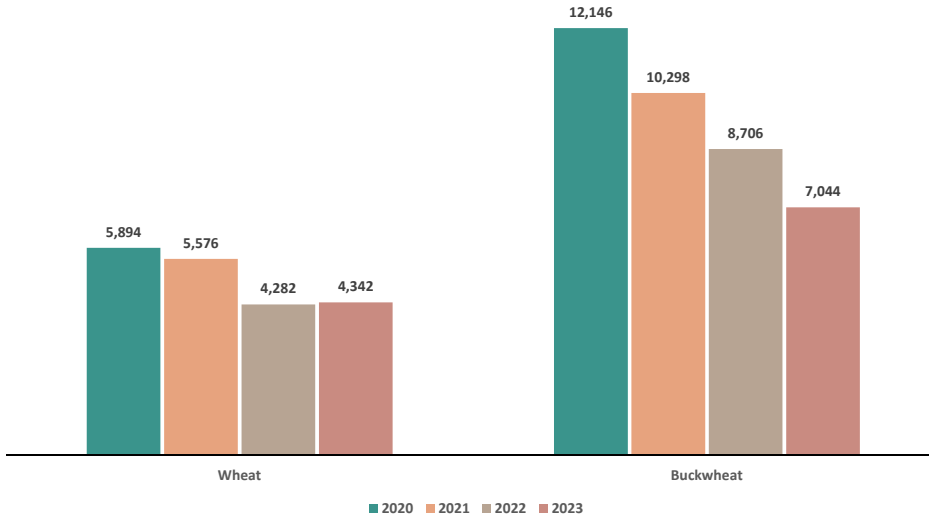


Figure 2.8: Wheat and buckwheat growers from 2020-2023

Table 2.5: Wheat production by Dzongkhag

Dzongkhag	Number of Grower	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	495	352.23	321.39	156.94
Chhukha	203	84.50	75.03	41.66
Dagana	74	28.98	25.54	9.37
Gasa	132	35.22	34.02	9.43
Haa	579	324.11	256.04	112.91
Lhuentse	35	7.00	6.65	2.22
Monggar	54	20.83	18.52	7.77
Paro	669	424.08	414.85	234.89
Pema Gatshel	6	4.37	3.77	1.39
Punakha	417	150.87	145.65	51.56
Samdrup Jongkhar	76	12.26	11.51	5.10
Samtse	223	38.12	33.22	11.17
Sarpang	21	4.23	3.76	1.71
Thimphu	97	66.90	51.83	24.44
Trashigang	73	14.97	13.87	5.62
Trashi Yangtse	17	3.52	3.46	1.48
Trongsa	271	97.88	85.81	36.41
Tsirang	40	10.96	10.26	3.55
Wangdue Phodrang	761	275.97	249.11	104.38
Zhemgang	99	45.11	41.06	15.01
Total	**4,342**	**2,002.10**	**1,805.34**	**837.01**

Table 2.6: Buckwheat production by Dzongkhag

Dzongkhag	Number of Grower	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	713	614.94	516.14	254.42
Chhukha	609	209.88	190.09	79.52
Dagana	256	107.01	86.81	35.70
Gasa	17	3.93	1.93	0.91
Haa	297	97.73	83.59	30.97
Lhuentse	13	5.26	4.61	1.30
Monggar	357	117.27	104.55	40.88
Paro	139	77.11	68.62	30.41
Pema Gatshel	483	93.72	84.10	30.89
Punakha	146	48.76	48.27	20.82
Samdrup Jongkhar	924	351.26	325.13	122.38
Samtse	544	81.27	72.83	23.87
Sarpang	199	38.15	30.53	10.36
Thimphu	6	0.68	0.68	0.43
Trashigang	534	166.33	151.46	68.14
Trashi Yangtse	22	4.89	4.03	2.22
Trongsa	463	238.97	212.68	81.93
Tsirang	334	61.43	54.01	16.33
Wangdue Phodrang	623	222.35	161.76	55.66
Zhemgang	365	158.44	140.78	58.37
Total	**7,044**	**2,699.37**	**2,342.58**	**965.51**

2.1.4 Barley and Millet

The 2023 integrated census collected information on the harvest of other cereals such as that of barley and millet. Although these cereals are cultivated on a small scale, these are important for food security.

A total of 518 MT of barley (Table 2.7) and 530 MT (Table 2.8) of millet were recorded in 2023. The harvested production of barley fell by 97 MT while millet fell by 72 MT than in 2022 (Figure 2.9).

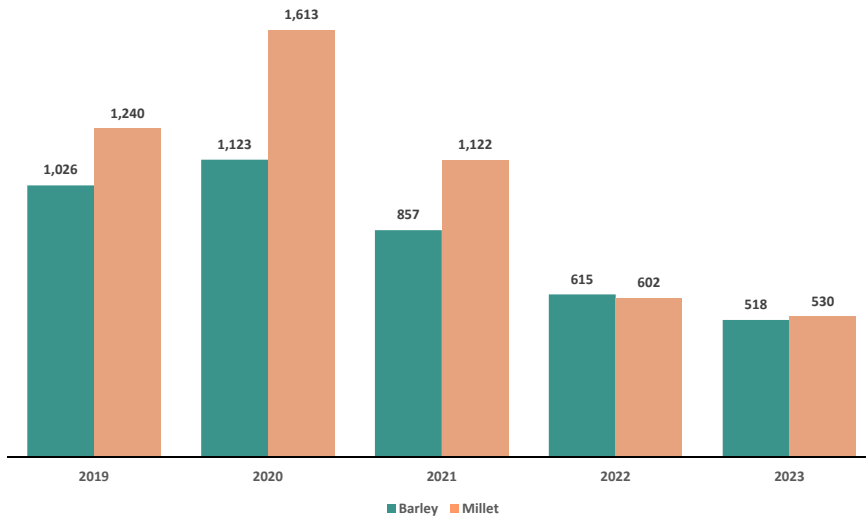


Figure 2.9: Barley and millet production from 2019-2023

Although the harvested area increased for both barley and millet, there was a drop in yield per acre for both crops compared to 2022. The number of barley and millet growers dropped by 401 households, 190 households respectively (Figure 2.10).

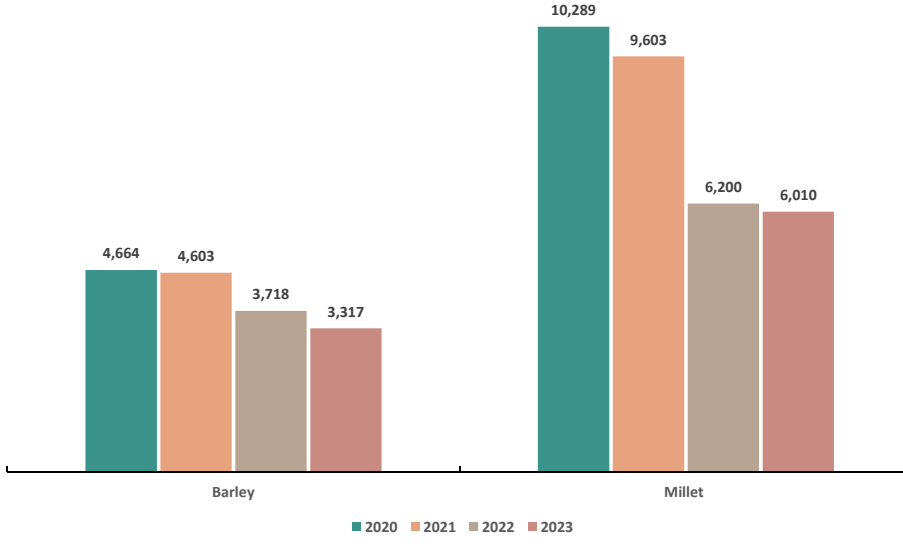


Figure 2.10: Barley and millet growers from 2020-2023

Table 2.7: Barley production by Dzongkhag

Dzongkhag	Number of Grower	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	479	284.96	250.59	132.40
Chhukha	98	40.57	30.44	13.43
Dagana	56	20.61	17.22	7.17
Gasa	261	94.80	90.12	31.95
Haa	98	21.16	17.30	7.41
Lhuentse	6	1.54	1.47	0.32
Monggar	720	360.10	319.61	143.98
Paro	67	27.15	26.32	15.33
Pema Gatshel	56	9.12	7.59	3.41
Punakha	48	10.54	10.01	3.93
Samdrup Jongkhar	180	38.51	37.33	11.54
Samtse	52	6.32	5.37	1.71
Sarpang	2	0.70	0.55	0.25
Thimphu	59	21.61	17.04	9.26
Trashigang	311	71.59	65.21	31.45
Trashi Yangtse	54	5.65	4.66	2.20
Trongsa	444	168.76	156.22	67.20
Tsirang	17	4.38	4.00	1.91
Wangdue Phodrang	277	78.33	73.73	29.26
Zhemgang	32	10.15	8.53	4.03
Total	**3,317**	**1,276.54**	**1,143.30**	**518.13**

Table 2.8: Millet production by Dzongkhag

Dzongkhag	Number of Grower	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	-	-	-	-
Chhukha	746	185.89	165.17	64.86
Dagana	481	112.45	97.98	41.50
Gasa	1	0.06	0.06	0.03
Haa	91	14.55	13.74	4.80
Lhuentse	170	41.98	40.36	22.28
Monggar	78	11.87	9.99	4.12
Paro	20	5.38	5.14	2.79
Pema Gatshel	296	55.40	51.16	16.58
Punakha	1	0.02	0.02	0.02
Samdrup Jongkhar	299	53.47	46.44	20.24
Samtse	1755	276.64	255.43	96.66
Sarpang	525	154.43	128.96	55.31
Thimphu	-	-	-	-
Trashigang	225	28.38	26.70	12.39
Trashi Yangtse	388	142.23	131.95	113.21
Trongsa	140	29.49	27.07	11.95
Tsirang	561	122.60	117.01	47.25
Wangdue Phodrang	43	7.08	6.46	2.56
Zhemgang	190	41.93	36.71	13.71
Total	**6,010**	**1,283.827**	**1,160.353**	**530.256**

2.1.5 Quinoa

Quinoa is a new crop introduced by the Ministry of Agriculture and Forests in 2015 to enhance the food and nutritional security of the Bhutanese people. Table 2.9 shows the quinoa production by Dzongkhag.

A total of about 13 MT of quinoa was harvested in 2023, which is 5 MT less compared to 2022. The area under quinoa cultivation dropped to 28 acres, a decrease of 11 acres from the previous year. The number of quinoa growers decreased from 331 growers to 223 growers in 2023 (Figure 2.11).

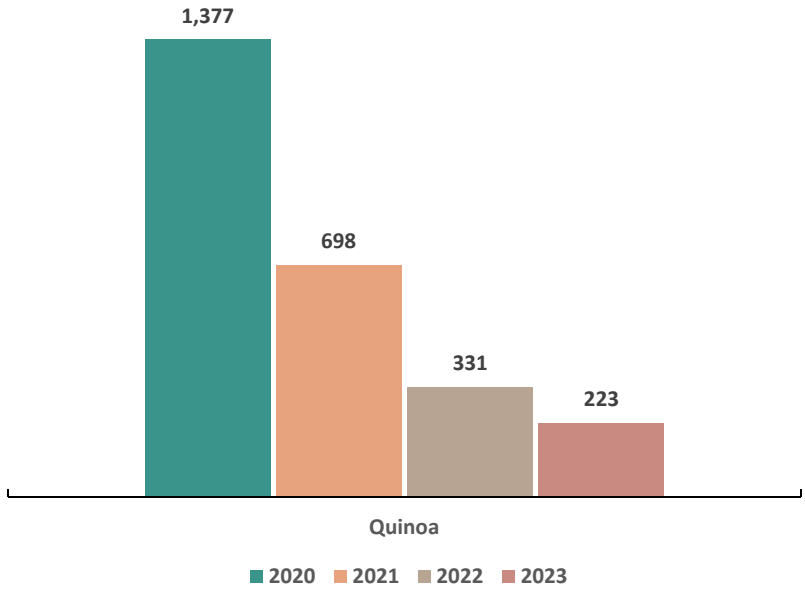


Figure 2.11: Quinoa growers from 2020-2023

Table 2.9: Quinoa production by Dzongkhag

Dzongkhag	Number of Grower	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	1	0.01	0.01	0.00
Chhukha	3	0.85	0.85	0.18
Dagana	1	0.50	0.00	0.00
Gasa	0	0.00	0.00	0.00
Haa	0	0.00	0.00	0.00
Lhuentse	9	0.66	0.64	0.21
Monggar	27	4.19	3.40	0.90
Paro	-	-	-	-
Pema Gatshel	4	0.17	0.17	0.05
Punakha	-	-	-	-
Samdrup Jongkhar	11	2.60	1.90	0.31
Samtse	38	2.28	1.96	0.58
Sarpang	12	1.16	1.11	0.58
Thimphu	-	-	-	-
Trashigang	77	11.06	9.69	7.77
Trashi Yangtse	17	2.55	2.27	1.71
Trongsa	5	1.25	1.21	0.46
Tsirang	3	0.55	-	-
Wangdue Phodrang	-	-	-	-
Zhemgang	15	0.46	0.44	0.14
Total	**223**	**28.28**	**23.65**	**12.87**

2.2 Oilseeds and pulses

The oilseeds and pulses play an important role as they are rich in energy and protein, which are essential for human diet.

The predominant oilseeds crops grown in the country are mustard and soya bean. Pulses are dry edible seeds of leguminous plants. They are also called grain legumes mostly consumed in the form of seeds in whole, split, hulled split or flour. Pulses are considered nutritious and important sources of proteins. According to GPF 2020, growing of pulses decreases GhG gases and improves soil fertility. The main pulses grown in the country are rajma beans, mung beans and lentils.

However, differential production performances of these crops have become a cause of concern. Globally, the production of oilseeds has exhibited growth with the improvement in the farming techniques with hi-technology.

In 2023, the production of main oilseeds and pulses increased compared to 2022, which can be attributed to the increase in the area harvested.

There was considerable increase in the harvested area for many oilseeds and pulses. The upward trend both in harvested production and area (Figure 2.12 in the case of mustard cultivation) for these crops may be due to an increase in area under cultivation.

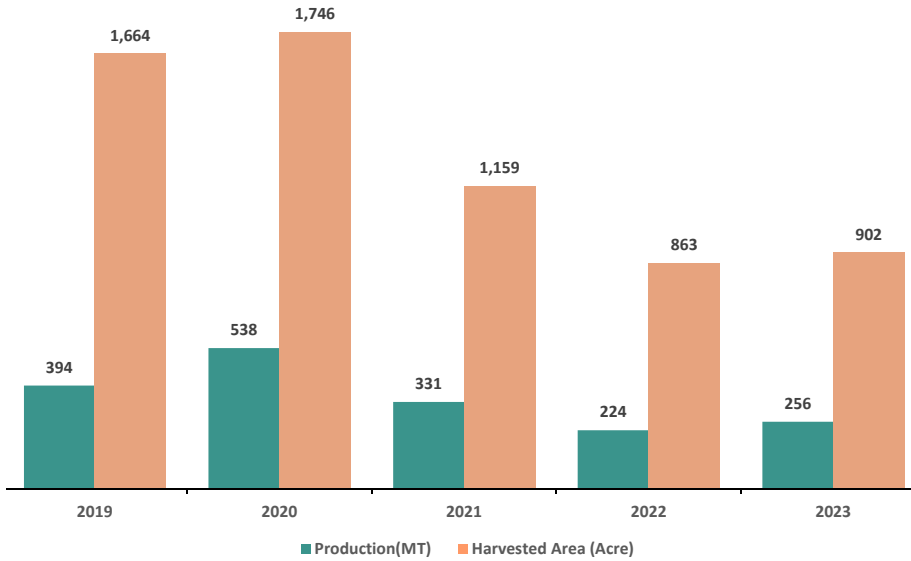


Figure 2. 12: Production and harvested area of mustard from 2019-2023

Table 2.10: Oilseeds and pulses production by type

Type	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Mustard	1,016.28	902.48	256.07
Sunflower	7.40	7.07	3.32
Soya bean	258.88	224.66	65.93
Groundnut	219.72	196.69	120.70
Perilla	54.26	48.65	11.96
Adzuki Beans	81.76	68.44	24.59
Rajma beans	1,212.34	1,088.93	352.90
Mung beans	1,088.13	929.13	257.68
Lentil	21.22	17.11	4.06

2.2.1 Mustard, Rajma beans and Mung beans

Among oilseeds and pulses, mustard, rajma beans and mung beans are the commonly grown crops in the country. A total of 256 MT (Table 2.11) of mustard was harvested in 2023. This was 32 MT more in 2022. Paro dzongkhag recorded the highest production (30 MT) followed by Trashigang (26 MT) and Chhukha (24 MT).

Table 2.11: Mustard production by Dzongkhag

Dzongkhag	Number of Grower	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	74	31.05	19.37	3.55
Chhukha	445	83.65	77.58	24.52
Dagana	242	83.54	76.42	20.10
Gasa	27	3.74	3.44	0.90
Haa	162	53.78	48.14	14.41
Lhuentse	96	14.28	13.60	3.09
Monggar	121	42.33	39.43	11.22
Paro	168	80.36	76.31	30.47
Pema Gatshel	231	37.80	32.29	9.71
Punakha	157	40.96	38.13	8.19
Samdrup Jongkhar	253	51.15	44.07	10.84
Samtse	733	95.94	84.23	21.21
Sarpang	287	77.23	59.94	15.82
Thimphu	14	7.23	5.41	0.81
Trashigang	295	82.80	79.12	26.09
Trashi Yangtse	5	0.95	0.93	0.24
Trongsa	46	13.55	12.30	3.14
Tsirang	364	78.47	72.77	17.28
Wangdue Phodrang	310	81.42	69.56	20.05
Zhemgang	143	56.07	49.47	14.45
Total	**4,173**	**1,016.28**	**902.48**	**256.07**

A total of 353 MT of rajma beans (Table 2.12) was harvested. Dagana dzongkhag recorded the highest production of rajma beans (87 MT) followed by Monggar dzongkhag (80 MT).

Table 2.12: Rajma beans production by Dzongkhag

Dzongkhag	Number of Grower	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	-	-	-	-
Chhukha	234	20.51	19.79	9.35
Dagana	1,228	332.42	286.46	87.37
Gasa	2	0.25	0.25	0.09
Haa	3	0.07	0.07	0.03
Lhuentse	24	0.75	0.72	0.23
Monggar	764	283.31	248.72	80.96
Paro	6	0.67	0.62	0.12
Pema Gatshel	109	27.61	25.07	8.60
Punakha	-	-	-	-
Samdrup Jongkhar	832	197.62	181.46	72.67
Samtse	1,289	35.01	33.79	13.87
Sarpang	577	49.43	46.39	15.35
Thimphu	25	0.24	0.14	0.17
Trashigang	484	238.26	222.99	55.04
Trashi Yangtse	39	2.19	1.53	0.73
Trongsa	2	0.06	0.06	0.06
Tsirang	169	15.90	13.41	4.09
Wangdue Phodrang	2	0.26	0.26	0.17
Zhemgang	203	7.80	7.22	4.00
Total	**5,992**	**1,212.34**	**1,088.93**	**352.90**

As for the mung bean, the production was 257 MT. This was 38 MT more compared to 2022. This is due to an increase in harvested area (203 acres more than 2022). Also, the number of growers has increased by 1527 compared to 2022. Dagana dzongkhag recorded the highest production of 91 MT followed by Tsirang dzongkhag (40 MT).

Table 2.13: Mung beans production by Dzongkhag

Dzongkhag	Number of Grower	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	16	0.39	0.18	0.07
Chhukha	771	102.72	87.41	29.26
Dagana	650	380.51	330.49	91.31
Gasa	-	-	-	-
Haa	-	-	-	-
Lhuentse	9	0.22	0.21	0.11
Monggar	278	47.71	39.15	11.60
Paro	-	-	-	-
Pema Gatshel	517	31.88	27.52	9.47
Punakha	-	-	-	-
Samdrup Jongkhar	945	113.13	101.19	30.44
Samtse	1,843	129.43	109.67	27.19
Sarpang	412	74.08	53.59	10.26
Thimphu	-	-	-	-
Trashigang	96	13.31	13.18	5.83
Trashi Yangtse	7	0.77	0.41	0.13
Trongsa	-	-	-	-
Tsirang	623	189.71	162.34	39.97
Wangdue Phodrang	-	-	-	-
Zhemgang	105	4.29	3.80	2.04
Total	**6,272**	**1,088.13**	**929.13**	**257.68**

2.2.2 Other Oilseeds and pulses

The harvest of other oilseeds and pulses included sunflower at 3.32 MT (more 1.32 MT than in 2022), soya bean at 66 MT (more 8 MT than in 2022), groundnut at 121 MT (more 8 MT than in 2022), perilla at 12 MT (less 2 MT than in 2022), adzuki beans dry at 25 MT (more 9 MT than in 2022) and lentil at 4 MT (more 2 MT than in 2022). The details of other oilseeds and pulses production are provided in Annex Table A2.1 to Table A2.6.

2.3 Vegetables

Farmers grow more than one vegetable in Bhutan. Cabbage, cauliflower, chilli, broccoli and beans are the most commercially viable vegetables grown in the country. This chapter presents different types of vegetables grown including area and production disaggregated by Dzongkhag. Vegetables grown principally for animal feed are excluded based on the recommendations of the FAO.

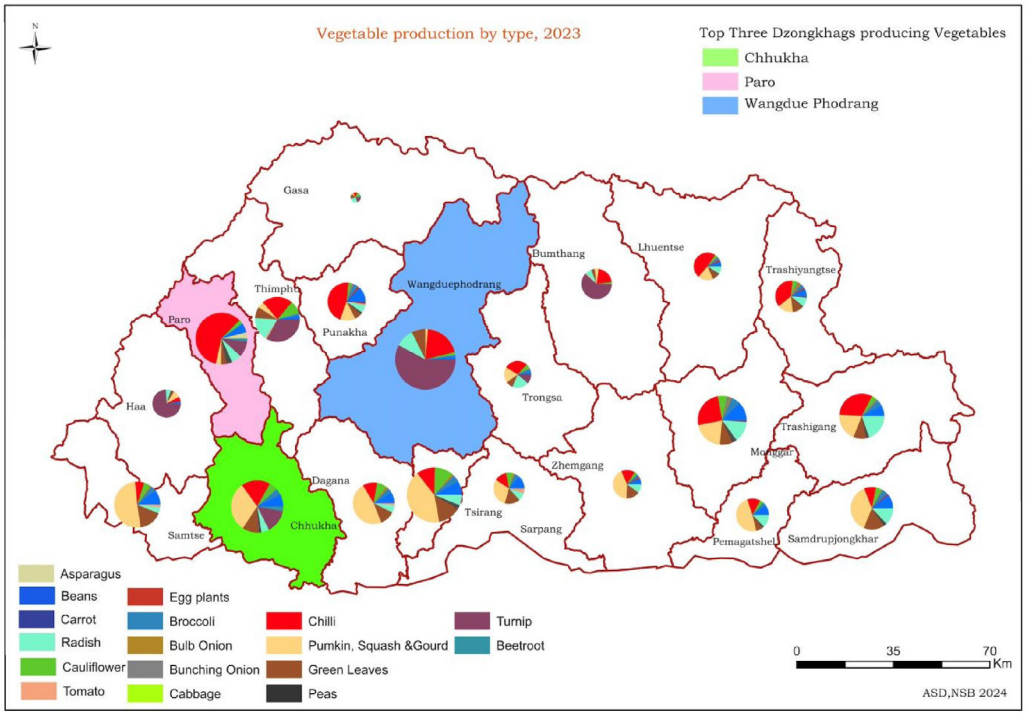
Table 2.14 shows the vegetables and spices production by type in 2023. About 26,825 MT of vegetables were produced in 2023. The major vegetables grown in the country are cabbage, cauliflower, and chilli. Paro, Wangdue Phodrang and Chhukha were the major vegetable producing Dzongkhags in 2023.Map 2.2 shows the share of vegetable production by Dzongkhag, and by crop type.

Table 2.14: Vegetables and spices production by type

Dzongkhag	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Asparagus	124.36	122.39	96.72
Broccoli	671.94	638.67	682.04
Cabbage	1,443.20	1,378.05	2,763.22
Cauliflower	787.91	754.74	1,063.04
Chili	3,197.15	2,888.53	4,848.12
Green leaves			2,041.47
Onion bulb	198.85	191.36	184.39
Spring/bunching onion	197.77	195.35	175.75
Eggplant	145.62	140.85	163.53
Tomato	154.39	149.32	206.22
Pumpkins, squash & gourds			4,930.89
Cucumber	371.94	355.44	1,036.70
Carrot	497.62	469.60	1,562.28
Radish	1,132.24	1,102.62	2,033.89
Turnip	1,143.68	1,105.00	3,082.90
Peas (green/fresh)	361.85	335.61	332.72
Beetroot	34.26	34.20	89.02
Beans (green/fresh)	1,645.76	1,531.50	1,532.92
Total vegetables	**12108.52**	**11,393.23**	**26,825.81**
Ginger	1,667.75	1,613.30	3,076.03
Turmeric	143.10	140.13	134.70
Garlic	369.19	362.03	366.16
Cardamom	10,083.64	8,446.84	1,103.65
Coriander	138.87	135.94	108.07
Sichuan Pepper			21.47
Garlic leaves	124.98	121.29	110.85
Total spices	**12,527.54**	**10,819.52**	**4,920.92**

2.3.1 Cabbage and Cauliflower

Cabbage and cauliflower are commonly grown vegetables in the country. These vegetables are consumed mostly as curry and sometimes it is used as salad. The total harvest of cabbage was 2,763 MT (Table 2.15) in 2023. This was 443 MT less than the production level in 2022.



Map 2.2: Share of vegetables production by Dzongkhag and by crop type

Table 2.15: Cabbage production by Dzongkhag

Dzongkhag	Number of Grower	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	975	19.67	19.42	43.93
Chhukha	1,605	91.19	87.57	164.21
Dagana	1,436	45.92	44.20	66.16
Gasa	211	5.73	5.42	7.99
Haa	364	27.13	21.98	58.37
Lhuentse	1,074	27.66	26.50	48.99
Monggar	2,767	128.72	119.35	162.36
Paro	1,294	423.64	408.20	1,057.24
Pema Gatshel	1,586	35.61	33.19	58.37
Punakha	330	12.47	11.59	17.88
Samdrup Jongkhar	2,103	63.04	59.40	83.81
Samtse	3,353	95.53	93.19	90.46
Sarpang	2,651	52.21	50.97	80.94
Thimphu	752	33.81	31.84	84.62
Trashigang	3,086	86.60	84.68	141.57
Trashi Yangtse	1415	63.29	59.43	104.09
Trongsa	789	24.71	24.08	42.75
Tsirang	1,680	105.81	102.79	146.41
Wangdue Phodrang	770	73.72	68.72	261.92
Zhemgang	1,029	26.76	25.53	41.16
Total	**29,270**	**1,443.20**	**1,378.05**	**2,763.22**

The overall fall in cabbage production in 2023 was due to the reduction in the harvest area (158 acres less than in 2022). The yield per acre in 2023 was 2,005 kg, this was 82 kg less than in 2022. Paro dzongkhag which produced 1139 MT of cabbage in 2022, harvested 1057 MT in 2023 (less 82 MT than in 2022).

The recorded yield per acre for Paro dzongkhag was 3,129 kg in 2022 while it dropped to 2590 kg per acre in 2023. This was 539 kg per acre less in 2023 compared to 2022. Similarly, Wangdue Phodrang dzongkhag harvested only 262 MT in 2023 (less 256 MT than in 2022) and the per acre yield increased from 4,841 kg in 2022 to 3811 kg in 2023. Figure 2.13 shows the percentage share of cabbage production in 2023. Share of Dzongkhags with less than 5 percent is not shown here.

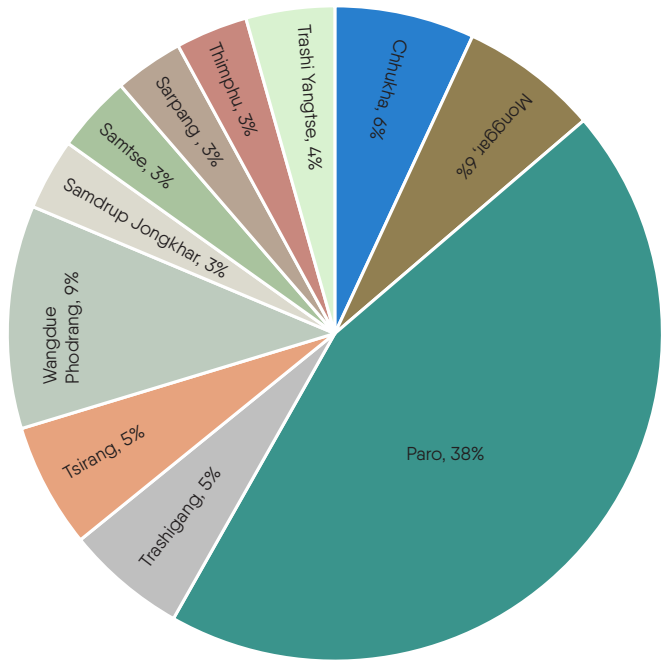


Figure 2.13: Production share of cabbage by major producing Dzongkhags

Cauliflower also saw a decrease in the production from 1,196 MT in 2022 to 1063 MT (Table 2.16) in 2023. This was about 133 MT less than in 2022.

The overall yield per acre was 1,408 kg in 2023 (more 101 kg per acre than in 2022). However, the overall cabbage and cauliflower harvest in the country has remained rather stable between 2018 and 2023. The country harvested 4,035 MT of cabbage and 1,190 MT of cauliflower in 2018.

Table 2.16: Cauliflower production by Dzongkhag

Dzongkhag	Number of Grower	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	481	6.62	6.50	10.76
Chhukha	1,498	79.67	76.95	95.11
Dagana	1,145	53.30	51.73	84.83
Gasa	143	8.62	8.36	10.25
Haa	136	2.74	2.57	2.96
Lhuentse	694	11.69	11.16	15.80
Monggar	1,981	82.28	76.93	94.18
Paro	330	32.95	30.85	45.38
Pema Gatshel	1,172	20.83	19.22	24.64
Punakha	363	19.50	18.27	24.60
Samdrup Jongkhar	1,549	44.91	43.18	54.09
Samtse	2,653	76.36	74.51	63.64
Sarpang	1,991	37.76	36.43	46.51
Thimphu	645	51.98	49.85	122.58
Trashigang	1,622	41.79	40.65	48.58
Trashi Yangtse	766	25.45	22.94	33.09
Trongsa	550	19.71	18.96	25.43
Tsirang	1,442	133.02	129.70	208.88
Wangdue Phodrang	456	25.52	23.19	32.90
Zhemgang	602	13.22	12.81	18.84
Total	**20,219**	**787.91**	**754.74**	**1,063.04**

2.3.2 Beans and Broccoli

Beans are one of the main vegetable crops grown in the country. The total harvest of beans was 1,533 MT (see Table 2.17) in 2023. The production figure remained similar to 2022 whereas there is a decrease in harvested area (less 31 acres than in 2022).

The yield per acre in 2023 was 1000 per kg, this was 39 kg more than in 2022. Samtse dzongkhag recorded the highest increase in production of 143 MT (more 23 MT than in 2022) followed by Dagana and Chhukha (more 22MT and 18MT respectively than in 2022).

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Table 2.17: Beans production by Dzongkhag

Dzongkhag	Number of Grower	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	440	3.30	3.29	4.92
Chhukha	2,357	134.41	130.40	131.37
Dagana	2,469	133.60	122.82	94.25
Gasa	28	0.46	0.36	0.42
Haa	305	15.36	14.39	12.25
Lhuentse	990	43.64	35.72	26.66
Monggar	3,083	241.52	209.90	192.32
Paro	1,040	79.78	74.76	103.72
Pema Gatshel	2,307	85.12	75.92	68.84
Punakha	931	96.10	88.87	122.14
Samdrup Jongkhar	2,808	112.76	108.15	128.69
Samtse	5,351	174.77	169.67	143.73
Sarpang	3,062	78.10	75.81	85.01
Thimphu	824	21.03	20.33	33.55
Trashigang	2,746	82.18	80.10	99.20
Trashi Yangtse	1,334	44.84	41.19	49.93
Trongsa	469	8.52	8.18	12.22
Tsirang	2,523	227.02	213.34	158.79
Wangdue Phodrang	715	33.20	29.76	30.63
Zhemgang	1,080	30.06	28.56	34.30
Total	**34,862**	**1,645.76**	**1,531.50**	**1,532.92**

Broccoli saw a decrease in the production from 917 MT in 2022 to 682 MT (Table 2.18) in 2023. This was about 235 MT less than in 2022. This can be due to the decrease in harvested area from 895 acres in 2022 to 682 acres in 2023. Also, the number of growers has reduced from 24,050 households to 20,683 in 2023. Punakha and Monggar dzongkhag, which accounted for a higher production share of broccoli in 2022 saw a drop in the harvested production. Punakha dzongkhag harvested 31 MT (less 33 MT than in 2022) while Monggar dzongkhag harvested 97 MT (less 32 MT than in 2022) in 2023. At the national level, the broccoli yield per acre of land increased from 1,023 kg in 2022 to 1,067 kg in 2023.

Table 2.18: Broccoli production by Dzongkhag

Dzongkhag	Number of Grower	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	345	3.99	3.96	5.85
Chhukha	1,464	66.89	64.19	69.52
Dagana	1,168	42.32	39.77	45.86
Gasa	181	2.85	2.55	2.73
Haa	56	1.15	1.04	0.76
Lhuentse	599	11.41	10.98	12.78
Monggar	2,158	96.95	88.72	96.78
Paro	352	11.87	11.40	12.25
Pema Gatshel	1,212	22.25	20.37	22.94
Punakha	492	33.19	31.16	36.45
Samdrup Jongkhar	1,710	45.47	43.20	48.28
Samtse	2,565	73.36	70.75	53.50
Sarpang	2,048	29.66	28.77	31.16
Thimphu	566	21.80	20.77	20.65
Trashigang	2,103	50.26	49.35	53.59
Trashi Yangtse	685	24.67	23.17	28.07
Trongsa	500	13.77	13.36	16.98
Tsirang	1,368	79.22	76.80	80.99
Wangdue Phodrang	472	25.81	24.25	25.83
Zhemgang	639	15.06	14.13	17.08
Total	**20,683**	**671.94**	**638.67**	**682.04**

2.3.3 Chilli

Chilli is a commercial crop and one of the most important vegetables grown in almost all 20 Dzongkhags in the country. The total harvest of chilli was 4,848 MT (Table 2.19) in 2023. This was 709 MT less than the production level in 2022. The overall fall in production in 2023 was due to the reduction in the harvest area (526 acres less than in 2022) and number of growers (2269 less than in 2022). Even though the production has decreased, the yield per acre in 2023 was 1,678 kg, this was 51 kg more than in 2022. Most of the chilli growing Dzongkhags like Paro and Punakha harvested a lower level of production in 2023 than in 2022. Punakha dzongkhag harvested 434 MT (127 MT less than in 2022) while Paro harvested 1,005 MT (111 MT less than in 2022) in 2023.

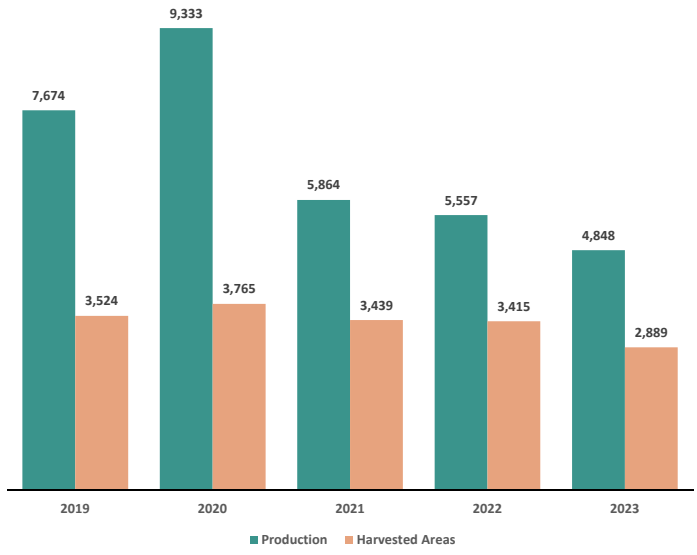


Figure 2.14: Production and harvested area of chilli from 2019-2023

The production of chilli in the country shows an unusual trend (Figure 2.14) between 2019 to 2023. A total of 7,674 MT of chilli was harvested from 3,524 acres in 2019. In terms of harvest area, there is not much difference between 2019 to 2023 while the recorded yields per acre were variable. The yield per acre was 2,177 kg in 2019, 2,480 kg in 2020, 1,705 kg in 2021 and 1,678 kg in 2022. The number of growers has increased from 2020 to 2022 and there is a slight decrease in 2023 (Figure 2.15).

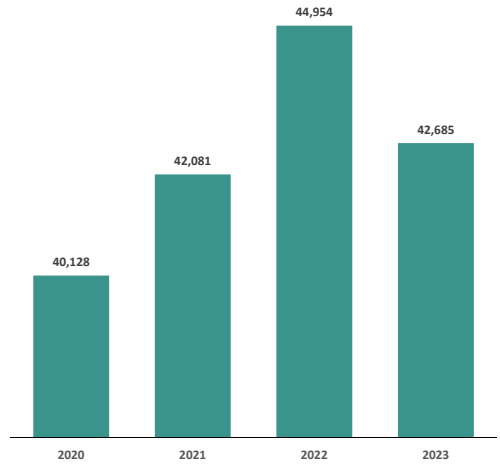


Figure 2.15: Chilli growers from 2020-2023

Table 2.19: Chilli production by Dzongkhag and FMCL

Dzongkhag	Number of Grower	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	1,057	42.71	40.16	123.18
Chhukha	2,358	178.22	172.91	313.62
Dagana	2,962	106.97	99.74	123.85
Gasa	75	5.49	5.16	8.49
Haa	526	17.53	17.13	27.68
Lhuentse	1,821	176.29	140.99	234.94
Monggar	3,924	357.06	286.44	394.09
Paro	2,523	511.09	491.69	1,005.07
Pema Gatshel	2,393	80.71	74.92	89.38
Punakha	1,557	193.20	183.07	434.95
Samdrup Jongkhar	2,505	123.15	116.63	103.32
Samtse	4,379	99.61	96.55	88.55
Sarpang	2,816	74.17	72.04	79.31
Thimphu	1,141	123.62	108.91	286.03
Trashigang	4,018	291.39	259.98	405.34
Trashi Yangtse	2,070	193.92	158.34	240.34
Trongsa	1,053	79.78	75.73	131.34
Tsirang	2,430	209.72	200.95	211.58
Wangdue Phodrang	1,618	249.32	211.28	467.59
Zhemgang	1,459	74.98	67.70	78.92
FMCL	0	8.24	8.24	0.57
Total	**42,685**	**3,197.15**	**2,888.53**	**4,848.12**

2.3.4 Bulb onion and Tomato

Bulb onion and tomatoes have been identified by the Ministry of Agriculture and Livestock as mandatory vegetable crops in the country. Bulb onion and tomatoes are not only used as vegetables, but often used as salad or production of pickles. There was lower harvested production of bulb onion (Table 2.20) in 2023 compared to many other major vegetables.

A total of 184 MT (less 80 MT than in 2022) of bulb onion was harvested in the country. The sharp decrease in the harvested production was recorded in Punakha (less 24 MT than in 2022) and Lhuentse (less 10 MT than in 2022). The harvested area for bulb onion decreased from 288 acres in 2022 to 191 acres in 2023.

Table 2.20: Onion bulb production by Dzongkhag

Dzongkhag	Number of Grower	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	44	0.47	0.40	0.56
Chhukha	177	4.42	4.31	3.44
Dagana	721	21.16	20.94	21.85
Gasa	-	-	-	-
Haa	54	0.81	0.80	0.82
Lhuentse	218	3.58	3.54	3.12
Monggar	853	28.53	25.87	20.58
Paro	244	2.65	2.63	3.14
Pema Gatshel	348	6.09	5.76	5.38
Punakha	114	3.06	3.06	3.65
Samdrup Jongkhar	679	11.80	11.41	10.34
Samtse	1,162	19.82	19.30	15.67
Sarpang	714	10.87	10.82	10.57
Thimphu	43	0.52	0.52	0.40
Trashigang	444	10.81	10.76	12.81
Trashi Yangtse	431	20.33	18.58	18.97
Trongsa	229	2.73	2.70	3.84
Tsirang	779	29.11	28.81	26.48
Wangdue Phodrang	128	17.65	16.74	17.61
Zhemgang	165	4.46	4.42	5.15
Total	**7,547**	**198.85**	**191.36**	**184.39**

Harvest of tomatoes, on the other hand, was 207 MT (Table 2.21) in 2023. This was similar to the production figure in 2022 even though the harvested area has decreased from 172 acres in 2022 to 149 acres in 2023.

Table 2.21: Tomato production by Dzongkhag and FMCL

Dzongkhag	Number of Grower	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	337	3.14	3.13	6.38
Chhukha	532	10.08	9.97	11.31
Dagana	1,202	13.73	13.35	18.93
Gasa	12	0.11	0.08	0.15
Haa	42	1.41	1.33	4.30
Lhuentse	175	2.15	2.01	2.51
Monggar	425	7.46	7.10	7.21
Paro	493	9.60	9.50	13.72
Pema Gatshel	554	6.09	5.70	6.13
Punakha	55	4.48	4.48	13.03
Samdrup Jongkhar	690	9.89	9.02	8.83
Samtse	1,847	28.16	27.38	25.13
Sarpang	1,744	21.14	20.84	32.20
Thimphu	381	5.14	5.06	15.04
Trashigang	337	4.67	4.55	5.45
Trashi Yangtse	231	3.52	3.30	5.29
Trongsa	86	1.33	1.30	1.75
Tsirang	594	15.02	14.39	17.77
Wangdue Phodrang	42	2.11	1.86	2.70
Zhemgang	279	3.97	3.76	4.89
FMCL	0	1.21	1.21	3.51
Total	**10,058**	**154.39**	**149.32**	**206.22**

2.3.5 Asparagus, Carrot and Radish

There were considerable contrasts among asparagus, carrot and radish producing Dzongkhags. A total of 97 MT (less 19 MT than in 2022) of asparagus (Table 2.22), 1,562 MT (more 262 MT than in 2022) of carrot (Table 2.23) and 2,034 MT (more 91 MT than in 2022) of radish (Table 2.24) were produced in 2023. The major Asparagus producing Dzongkhags are Paro (66 MT) followed by Thimphu (12 MT) and Trashigang (8 MT).

Table 2.22: Asparagus production by Dzongkhag

Dzongkhag	Number of Grower	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	11	0.61	0.61	0.56
Chhukha	38	2.27	2.22	0.39
Dagana	28	0.49	0.45	0.37
Gasa	3	0.04	0.04	0.04
Haa	33	0.79	0.79	0.75
Lhuentse	112	1.04	1.03	0.74
Monggar	64	2.24	2.23	0.55
Paro	226	76.65	76.61	65.96
Pema Gatshel	119	1.36	1.24	0.61
Punakha	13	0.86	0.86	0.91
Samdrup Jongkhar	42	0.84	0.83	0.49
Samtse	9	0.10	0.10	0.08
Sarpang	6	0.08	0.08	0.17
Thimphu	208	15.72	15.03	11.90
Trashigang	274	13.83	13.55	8.18
Trashi Yangtse	63	0.69	0.68	0.72
Trongsa	21	0.83	0.80	0.40
Tsirang	22	1.50	1.16	0.71
Wangdue Phodrang	27	3.16	3.06	2.99
Zhemgang	41	1.28	1.04	0.22
Total	**1,360**	**124.36**	**122.39**	**96.72**

About 1562 MT (more 262 MT than in 2022) of carrots (Table 2.23) were harvested from 468 acres in 2023. Haa and Chhukha dzongkhags accounted for the majority production of carrots in 2023, respectively with 246 MT and 1018 MT. About 2,034 MT (more 91 MT than in 2022) of radish (Table 2.24) were harvested from 1,102 acres in 2023. The per acre yield for carrot decreased at 3,326 kg (down 3,413 kg than in 2022) while for radish the yield increased at 1,844 kg (up 1,696 kg than in 2022). The detailed productions of other vegetables are provided in annex tables Table A2.7 to Table A2.15.

Table 2.23: Carrot production by Dzongkhag

Dzongkhag	Number of Grower	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	560	8.22	8.20	12.60
Chhukha	442	160.69	158.81	1,018.69
Dagana	297	4.40	4.28	5.11
Gasa	174	2.84	2.57	3.88
Haa	478	130.17	111.16	246.22
Lhuentse	360	5.50	5.33	8.20
Monggar	704	21.24	20.28	22.54
Paro	547	82.09	79.44	132.75
Pema Gatshel	240	3.37	3.18	3.28
Punakha	60	1.53	1.49	1.46
Samdrup Jongkhar	388	7.61	7.13	8.24
Samtse	358	5.87	5.78	4.74
Sarpang	283	2.80	2.71	3.03
Thimphu	496	17.32	16.15	38.26
Trashigang	682	13.96	13.56	14.78
Trashi Yangtse	492	9.42	9.29	10.43
Trongsa	263	3.94	3.86	5.54
Tsirang	173	5.98	5.82	5.94
Wangdue Phodrang	150	8.57	8.53	14.29
Zhemgang	177	2.13	2.04	2.29
Total	**7,324**	**497.62**	**469.60**	**1,562.28**

Table 2.24: Radish production by Dzongkhag

Dzongkhag	Number of Grower	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	681	22.64	22.61	38.72
Chhukha	1,125	49.10	47.60	82.56
Dagana	2,133	42.64	41.04	62.09
Gasa	375	13.31	13.19	17.48
Haa	273	17.55	15.90	30.45
Lhuentse	1,116	26.26	24.68	43.95
Monggar	3,630	152.81	145.37	216.44
Paro	577	54.55	52.22	108.17
Pema Gatshel	2,243	54.32	52.27	86.93
Punakha	541	23.01	22.83	61.93
Samdrup Jongkhar	2,518	76.84	75.22	150.70
Samtse	2,496	58.46	57.25	59.79
Sarpang	2,275	37.74	37.26	49.85
Thimphu	1,005	74.63	72.03	214.50
Trashigang	3,751	140.60	139.65	252.89
Trashi Yangtse	1,520	37.14	36.45	61.75
Trongsa	647	41.94	41.77	92.14
Tsirang	2,036	89.16	87.16	119.56
Wangdue Phodrang	900	89.00	88.20	232.23
Zhemgang	1,368	30.55	29.94	51.76
Total	**31,210**	**1,132.24**	**1,102.62**	**2,033.89**

2.3.6 Cardamom

Among major spices grown in the country, cardamom and ginger are mostly grown as export commodities. Cardamom and ginger farming have become promising livelihood options for many farmers. Cardamom and ginger farming cultivation have now expanded to many Dzongkhags. The harvest of cardamom in the country was 1,413 MT in 2019 while it was 1,104 MT in 2023. The harvest area over the years has decreased from 15,615 acres in 2019 to 8,447 acres in 2023 (Figure 2.16).

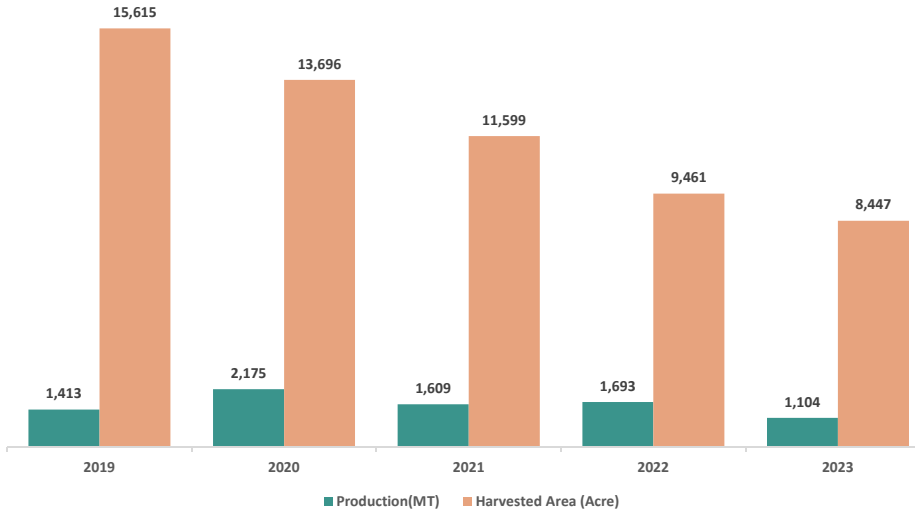


Figure 2.16: Production and harvested area of cardamom from 2019-2023

About 1,104 MT (Table 2.25) of cardamom were harvested from 8,447 acres in 2023. This was 589 MT less than in 2022. The climate change has been significantly impacting the traditional management practices of cardamom farming and the harvested production of cardamom has become uncertain due to persistent pests and diseases. Climate change and all these challenges have impacted the productivity and production of cardamom growers. The yield per acre was recorded at 131 kg in 2023, less 48 kg than in 2022. Major cardamom growing Dzongkhags–Samtse (less 170 MT than in 2022), Dagana (less 71 MT than in 2022) and Tsirang (less 14 MT than in 2022) recorded lower levels of production in 2023. The number of growers also decreased from 15,167 households in 2022 to 14,032 households in 2023 (Figure 2.17).

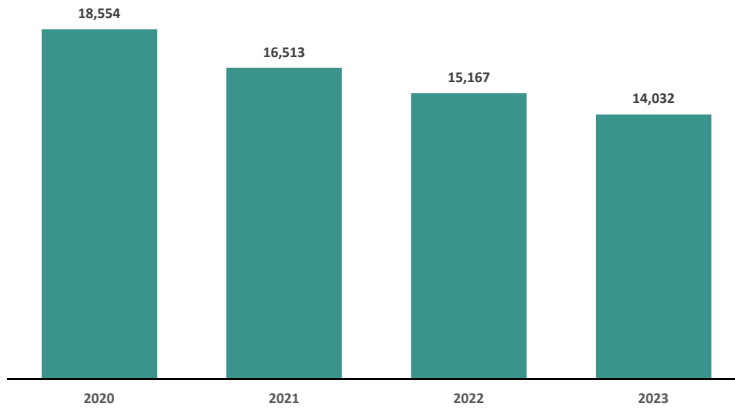


Figure 2.17: Cardamom growers from 2020-2023

Table 2.25: Cardamom production by Dzongkhag

Dzongkhag	Number of Grower	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	-	-	-	-
Chhukha	807	822.95	637.04	92.82
Dagana	2,009	2,091.64	1,849.99	218.43
Gasa	-	-	-	-
Haa	284	464.88	262.93	34.69
Lhuentse	304	39.68	38.05	4.25
Monggar	1,257	416.97	377.71	46.05
Paro	34	39.38	35.94	2.07
Pema Gatshel	848	264.68	244.84	24.06
Punakha	91	12.40	12.22	1.18
Samdrup Jongkhar	743	296.85	270.77	26.52
Samtse	2,907	2,048.02	1,773.58	169.77
Sarpang	1,068	950.04	864.50	146.95
Thimphu	-	-	-	-
Trashigang	785	168.30	157.64	20.42
Trashi Yangtse	189	19.13	18.66	3.30
Trongsa	319	491.14	405.91	58.69
Tsirang	1,487	1,264.93	924.46	198.47
Wangdue Phodrang	39	11.47	10.59	1.57
Zhemgang	861	681.20	562.02	54.40
Total	**14,032**	**10,083.64**	**8,446.84**	**1,103.65**

2.3.7 Ginger

Harvest of ginger was 3,076 MT (Table 2.26) in 2023. This was 635 MT less than in 2022. Samdrup Jongkhar harvested 637 MT (less 315 MT than in 2022), Samtse 445 MT (less 94 MT than in 2022) and Chhukha 912 MT (more 176 MT than in 2022) in 2023.

The national yield per acre increased from 1,879 kg in 2022 to 1,907 kg in 2023. About 362-acre reduction in the harvested area was observed in 2023 compared to previous year. Figure 2.18 provides the trend in the production and harvest area from 2019 to 2023.

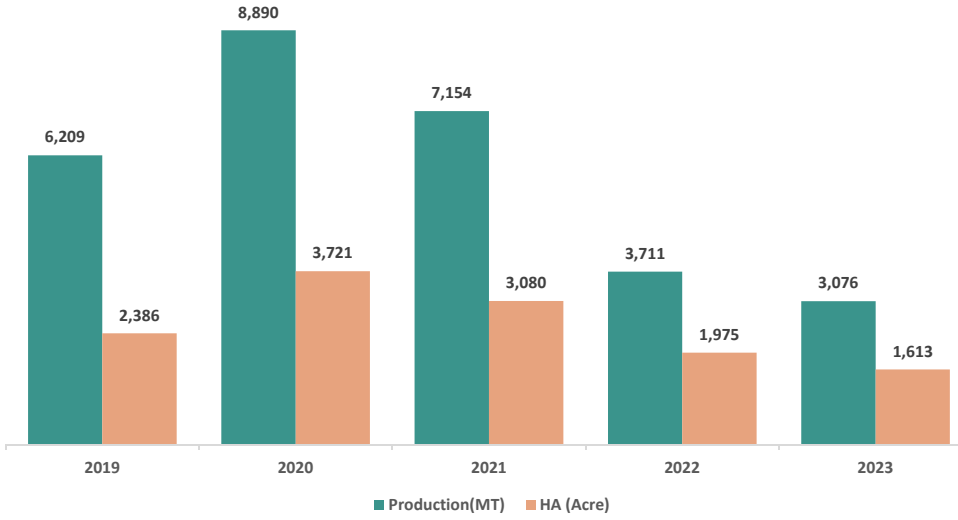


Figure 2.18: Production of ginger from 2019-2023

Table 2.26: Ginger production by Dzongkhag

Dzongkhag	Number of Grower	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	-	-	-	-
Chhukha	1,279	380.53	370.75	911.56
Dagana	1,473	82.50	81.58	129.65
Gasa	-	-	-	-
Haa	9	0.08	0.08	0.12
Lhuentse	201	2.23	2.23	2.96
Monggar	1,485	57.83	56.31	62.46
Paro	-	-	-	-
Pema Gatshel	1,312	94.38	91.56	195.16
Punakha	46	0.80	0.80	0.68
Samdrup Jongkhar	1,685	329.88	311.28	636.65
Samtse	2,284	306.00	298.04	445.23
Sarpang	1,359	77.26	69.32	94.30
Thimphu	-	-	-	-
Trashigang	739	35.08	34.22	66.32
Trashi Yangtse	625	14.14	14.04	17.29
Trongsa	201	3.94	3.93	4.76
Tsirang	1,352	133.66	133.25	228.34
Wangdue Phodrang	87	1.75	1.66	2.07
Zhemgang	869	147.70	144.25	278.48
Total	**15,006**	**1,667.75**	**1,613.30**	**3,076.03**

2.3.8 Sichuan pepper

The IALC 2023 collected information on the production of Sichuan pepper as the sale of Sichuan pepper or thingye fetches a good price to farmers. The harvested production here refers to domesticated Sichuan pepper and does not include those collected as NWFP from the forests.

The number of thingye growers have increased recently in many Dzongkhags. The harvested production of Sichuan pepper was 21 MT (Table 2.27) in 2023. Trashi Yangtse dzongkhag harvested 4.5 MT while Pema Gatshel harvested 3.31 MT and Tronsga harvested 3.28 MT. The production of other spices in 2023 such as that of turmeric, garlic and coriander are provided in the Annex Table A2.16 to Table A2.18.

Table 2.27: Sichuan pepper production by Dzongkhag

Dzongkhag	Number of Growers	Production (MT)
Bumthang	54	0.36
Chhukha	38	0.27
Dagana	172	0.65
Gasa	12	0.02
Haa	4	0.01
Lhuentse	165	0.54
Monggar	466	3.18
Paro	-	-
Pema Gatshel	436	3.31
Punakha	108	0.72
Samdrup Jongkhar	68	0.49
Samtse	27	0.17
Sarpang	8	0.04
Thimphu	166	0.74
Trashigang	306	0.88
Trashi Yangtse	515	4.50
Trongsa	323	3.28
Tsirang	134	1.06
Wangdue Phodrang	28	0.06
Zhemgang	137	1.19
Total	**3,167**	**21.47**

2.4 Roots and Tubers

According to FAO, many plants are grown chiefly for their roots or underground stems. These plants are generally known as roots and tubers. Roots and tubers are among the food crops that is grown mainly for human consumption. Roots and tubers are plants yielding starchy roots, tubers, rhizomes, corms and stems. FAO recommends that the denomination "roots and tubers" excludes crops that are cultivated mainly for feed (mangolds, swedes) or for processing into sugar (sugar beets), and those classified as "roots, bulb and tuberous vegetables" (onions, garlic and beets).

The main roots and tubers grown in Bhutan are potato, sweet potato, cassava, taro and ground apple. Roots and tuber crops are

considered important due to its richness in carbohydrates. Some roots and tubers provide minerals and essential vitamins and are often used as supplement crops in many countries to compensate for protein deficiencies. Roots and tubers (for example potato) crops in Bhutan still constitute an important and one of the components in our traditional diets.

Urban consumers, over time, have developed more preference for roots and tubers crops such as potatoes and cassava. The roots and tubers crop as staple foods have become more important in urban areas.

Table 2.28 shows the harvested production of roots and tuber by type in 2023. A total of about 38,327 MT of roots and tuber were produced in 2023. This was 6,768 MT more than in 2022. Map 2.3 presents the share of roots and tuber production by Dzongkhag, and by crop type. Wangdue Phodrang, Paro and Chhukha dzongkhags were the dominant roots and tuber producers in 2023.

Table 2.28: Roots & tuber production by type

Type	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Potato	8,433.78	8,015.61	37,749.00
Sweet Potato	46.44	41.55	33.42
Cassava	274.72	227.90	366.71
Taro	88.90	80.07	129.35
Ground apple	27.64	26.96	49.34

2.4.1 Potato

Among the roots and tuber, potato has been one of the highest cash crops exported to India and this generates some revenue to the farming population. The country produced 37,749 MT (Table 2.29) of potatoes in 2023, which was 6,603 MT more than in 2022. Most of the major potato producing Dzongkhags had higher harvests in 2023: Wangdue Phodrang harvested 12,819 MT (more 2586 MT than in 2022); Bumthang harvested 3,470 MT (more 610 MT than in 2022); and Chhukha harvested 3,757 MT (more 938 MT than in 2022). During the period of five years from 2019-2023, the country has harvested potatoes from 43,560 MT from 10,342 acres in 2019 to 37,749 MT from 8,016 acres in 2023 (Figure 2.19).

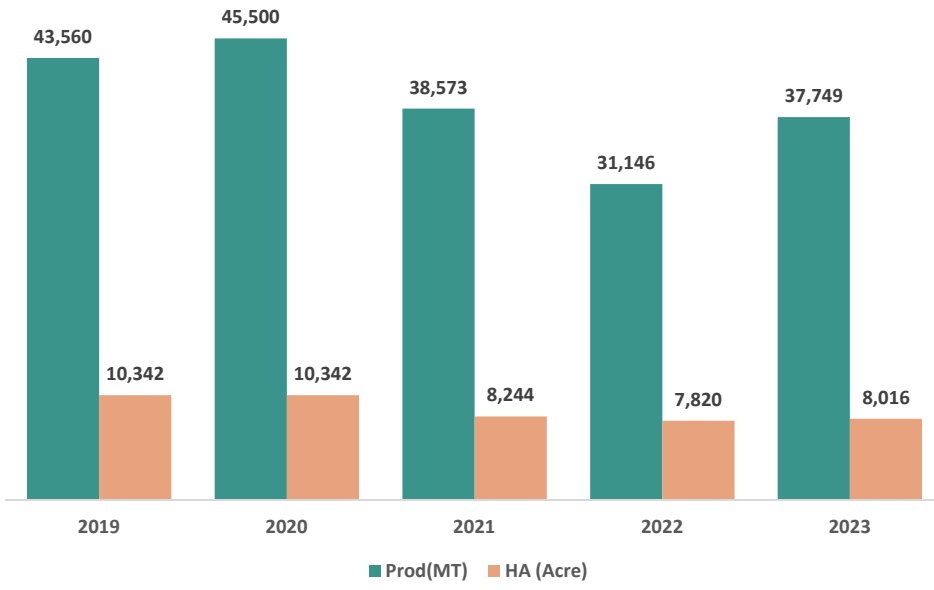


Figure 2.19: Production and harvested area of potato from 2019-2023

The number of potato growers increased to 35,371 (up 7 percent than in 2022) in 2023. Figure 2.20 shows the number of potato growers from 2020-2023.

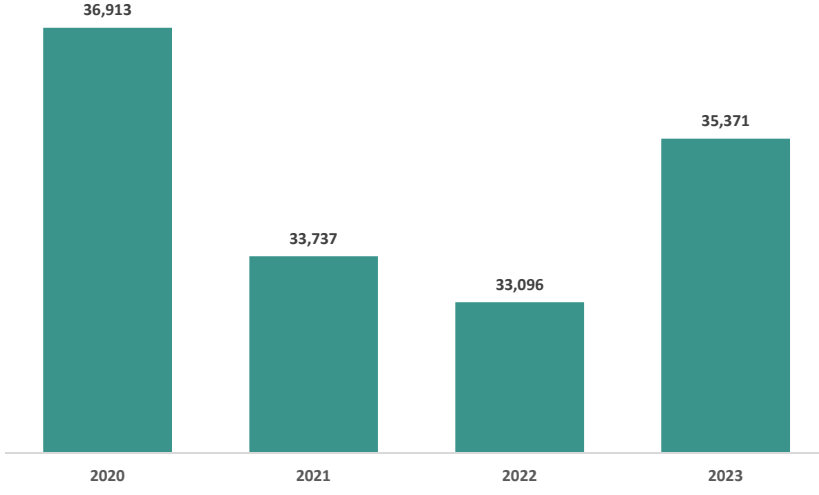
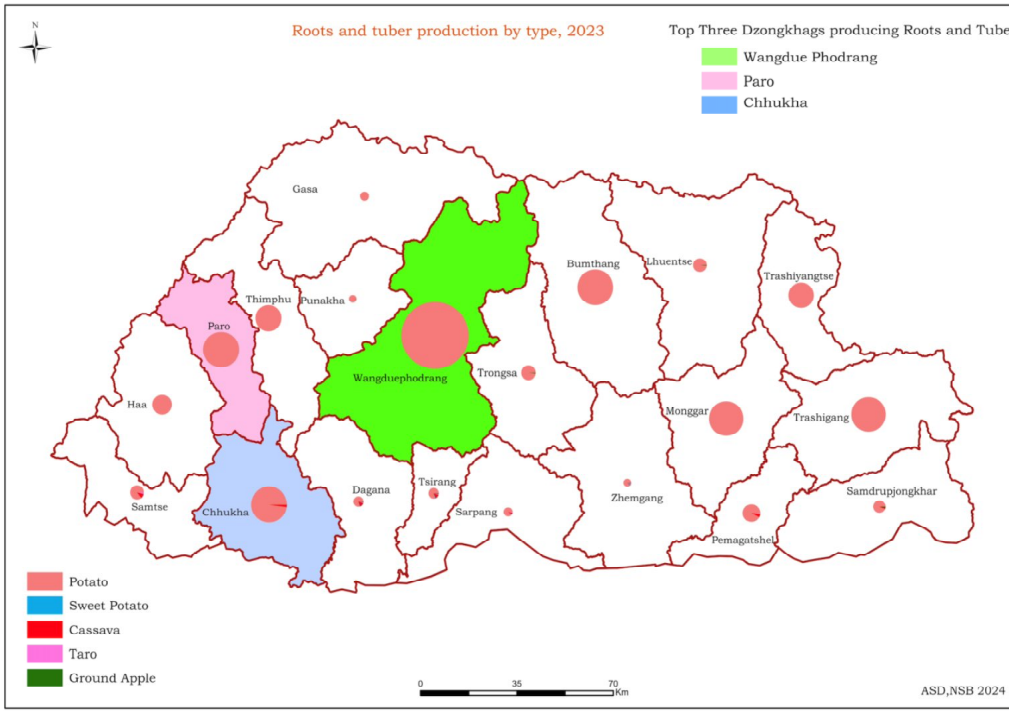


Figure 2.20: Potato growers from 2020-2023



Map 2.3: Share of roots and tuber production by Dzongkhag and by crop type

Table 2.29: Potato production by Dzongkhag and FMCL

Dzongkhag	Number of Grower	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	1,035	551.82	529.84	3,470.19
Chhukha	17,61	524.25	512.53	3,756.98
Dagana	1,543	144.38	134.40	244.20
Gasa	557	65.11	63.56	227.22
Haa	806	248.47	224.24	1,129.87
Lhuentse	1,739	172.10	152.42	343.28
Monggar	4,462	1,150.42	1,049.24	2,912.33
Paro	1,364	780.54	758.56	3,269.88
Pema Gatshel	2,033	242.23	227.58	782.29
Punakha	274	45.46	43.44	141.97
Samdrup Jongkhar	2,339	294.57	284.50	559.86
Samtse	3,186	225.43	210.92	304.45
Sarpang	2,121	125.17	116.33	168.84
Thimphu	1,039	275.81	256.22	1,790.88
Trashigang	4,226	949.66	888.76	3,373.16
Trashi Yangtse	1,587	379.60	345.37	1518.29
Trongsa	691	106.77	101.70	415.80
Tsirang	2,011	206.01	197.28	303.06
Wangdue Phodrang	1,719	1,813.63	1,794.14	12,819.06
Zhemgang	878	122.35	114.59	199.32
FMCL	0	10.00	10.00	18.06
Total	**35,371**	**8,433.78**	**8,015.61**	**37,749.00**

2.4.2 Cassava

About 367 MT of cassava (Table 2.30) was harvested in 2023. This was 131 MT more than in 2022. The per acre yield of cassava was recorded at 1,613 kg per acre in 2023, 211 kg more than in 2022. Major cassava producing Dzongkhags– Chhukha (more 80 MT than in 2022) and Pema Gatshel (more 15 MT than in 2022) reported higher levels of production in 2023.

Table 2.30: Cassava/Tapioca production by Dzongkhag

Dzongkhag	Number of Grower	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	-	-	-	-
Chhukha	733	87.46	76.81	137.68
Dagana	560	34.76	26.39	36.86
Gasa	-	-	-	-
Haa	20	0.86	0.86	0.99
Lhuentse	3	0.02	0.01	0.00
Monggar	133	3.68	2.99	4.00
Paro	-	-	-	-
Pema Gatshel	562	34.49	25.43	58.80
Punakha	1	0.01	0.01	0.01
Samdrup Jongkhar	588	17.76	11.91	18.53
Samtse	1,206	42.37	36.34	48.75
Sarpang	363	13.45	10.18	15.16
Thimphu	-	-	-	-
Trashigang	19	0.46	0.45	0.72
Trashi Yangtse	22	0.37	0.28	0.34
Trongsa	-	-	-	-
Tsirang	452	33.76	32.01	38.77
Wangdue Phodrang	7	0.11	0.10	0.19
Zhemgang	139	5.17	4.13	5.92
Total	**4,808**	**274.72**	**227.90**	**366.71**

2.4.3 Other Roots and Tuber

The harvest of other roots and tubers included 33 MT of sweet potato (up 6 MT than in 2022), 129 MT of taro (up 54 MT than in 2022) and 49 MT of ground apple (down 25 MT than in 2022). Lower levels of harvested production were recorded in part due to significant reduction in the area cultivated. The detailed harvested production for these roots and tubers is provided in Annex Table A2.19 to Table A2.22.

2.5 Fruits

World Health Organization (WHO) and Food and Agriculture Organization (FAO) advocates Fruits and Vegetables (F&V) as major sources of fibre in the diet and increased dietary fibre intake significantly reduces low-density lipoprotein (LDL) cholesterol, triglyceride levels, systolic blood pressure and thereby prevent non-communicable diseases. Bhutan produces a wide range of fruits and some nuts.

About 42,780 MT of fruits were harvested in 2023, of which, 34,895 MT were major fruits (such as apple, mandarin and areca nut) and 84 MT were newly promoted fruits (such as watermelon, kiwi and dragon fruit). Table 2.31 shows the production of fruits by type in 2023.

There is clear evidence that Paro, Thimphu, Haa and Bumthang are dominant apple producing dzongkhags while Samtse, Sarpang and Dagana dzongkhags are dominant areca nut producing Dzongkhags (Map 2.4). Similarly, Map 2.4 shows clear indication of Dagana, Tsirang, Zhemgang, Pema Gatshel, Samdrup Jongkhar, Monggar, Trashigang, Trashi Yangtse and Lhuentse as dominant mandarin growing Dzongkhags.

Table 2.31: Fruits production by type

Type	Total Trees	Bearing Trees	Production (MT)
Apple	190,121	125,292	2,317.09
Apricot	5,508	1,450	24.04
Areca nut	5,737,823	2,006,105	11,408.67
Avocado	160,818	16,964	192.06
Banana	680,785	191,964	2,348.53
Dragon fruit	28,782	1,636	4.49
Guava	59,081	45,564	583.20
Hazelnut	444,555	36,339	14.07
Jackfruit	9,988	4,619	335.90
Kiwi			33.91
Lemons & lime	70,545	15,678	139.13
Litchi	54,510	24,668	350.31
Mandarin	1,747,319	899,415	21,169.78
Mango	122,337	37,648	542.67
Papaya	15,456	8,940	132.05
Passionfruit			52.54
Peach	46,575	24,935	485.62
Pear	54,749	25,939	670.15
Persimmon	14,248	4,456	84.13
Pineapple			139.35
Plum	17,053	10,008	274.54
Pomegranate	13,258	5,767	55.23
Tree tomato	35,745	30,138	208.55
Walnut	42,892	8,911	129.31
Watermelon*	20.24	18.72	44.94
Strawberry*	6.49	5.97	3.38
Cucumber*	371.94	355.44	1036.70

*Sown Area * Harvest Area

2.5.1 Apple

Apple, mandarin and areca nut are major cash crops among fruit crops grown in the country. Although different varieties of apple are grown in the country, the IALC did not collect information on the varieties. About 2,317 MT of apples (Table 2.32) were harvested in 2023. This was 97 MT more than in 2022 (Figure 2.21). The per bearing tree yield of apples was recorded at 18 kg per tree in 2023, less 1 kg than in 2022. Major apple producing Dzongkhags–Paro harvested 1,625 MT (more 67 MT than in 2022) and Thimphu harvested 553 MT (more 88 MT than in 2022) in 2023.

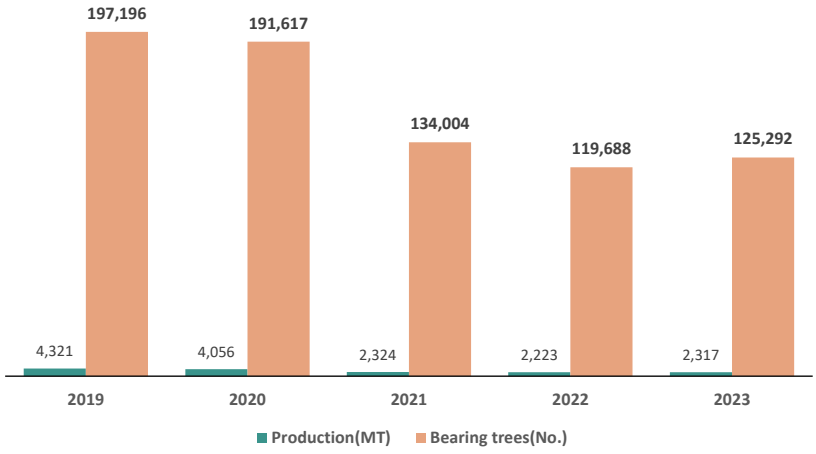
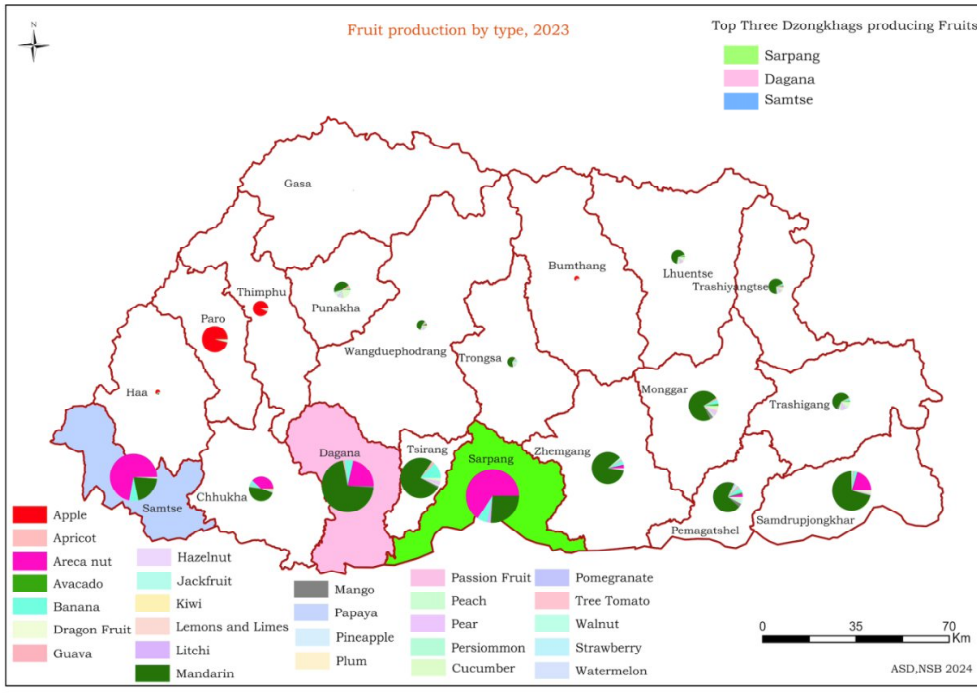


Figure 2.21: Production and bearing trees of apple from 2019-2023



Map 2.4: Share of fruits production by Dzongkhag and by crop type

Table 2.32: Apple production by Dzongkhag

Dzongkhag	Number of Grower	Total Trees	Bearing Trees	Production (MT)
Bumthang	1,063	9,671	2,473	43.11
Chhukha	422	6470	938	18.76
Dagana	65	274	33	0.09
Gasa	14	81	3	0.00
Haa	235	6,148	3,780	42.32
Lhuentse	302	2,050	267	3.03
Monggar	439	2,428	266	2.55
Paro	1,901	10,4707	79,043	1,625.29
Pema Gatshel	168	761	294	4.00
Punakha	61	213	17	0.34
Samdrup Jongkhar	144	887	168	2.49
Samtse	11	21	-	-
Sarpang	4	11	-	-
Thimphu	962	47,678	35,467	552.51
Trashigang	505	2,139	457	2.88
Trashi Yangtse	700	3,404	1445	9.44
Trongsa	69	160	79	0.84
Tsirang	187	798	52	0.32
Wangdue Phodrang	799	2,185	509	9.11
Zhemgang	7	35	1	0.00
Total	**8,058**	**190,121**	**125,292**	**2,317.09**

In terms of the yield per bearing tree, Paro recorded at 21 kg (less 1 kg than in 2022) and Thimphu at 16 kg (more 4 kg than in 2022). The higher level of apple production in 2023 was due to an increase in bearing trees to 125,292 (more 5,604 trees than in 2022). The number of apple growers stand at 8,058 households in 2023 as compared to 7,390 households in 2022 (Figure 2.22).

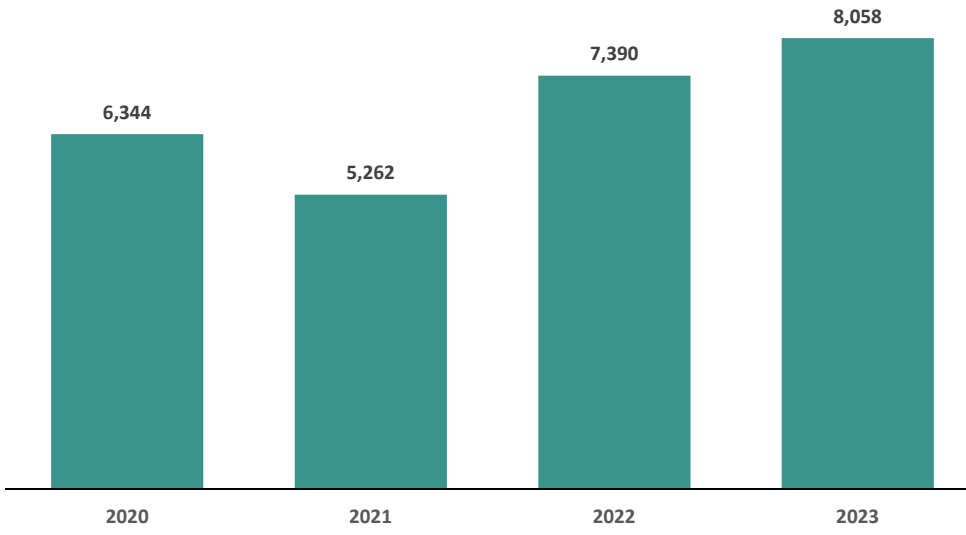


Figure 2.22: Apple growers from 2020-2023

2.5.2 Areca nut

Bhutan exports areca nut to India during the peak season and equally if not more, imports from India during the lean season. Chewing domapani is an integral part of our culture and enhancing the production to meet the domestic demand has become even more important.

About 11,409 MT of areca nuts (Table 2.33) were harvested in 2023. This was 303 MT more, equivalent to 3 percent more than in 2022. The per bearing tree yield of areca nut was recorded at 6 kg per tree in 2023, less 2 kg than in 2022.

Major areca nut producing Dzongkhags– Samtse harvested 3,915 MT (more 285 MT than in 2022), Sarpang harvested 4,582 MT (less 271 MT than in 2022) and Dagana harvested 1428 MT (more 221 MT than in 2022) in 2023. In terms of the yield per bearing tree, Samtse recorded at 7 kg (less 1 kg than in 2022), Sarpang at 5 kg (less 3 kg than in 2022) and Dagana at 5 kg (less 1kg than in 2022) in 2023.

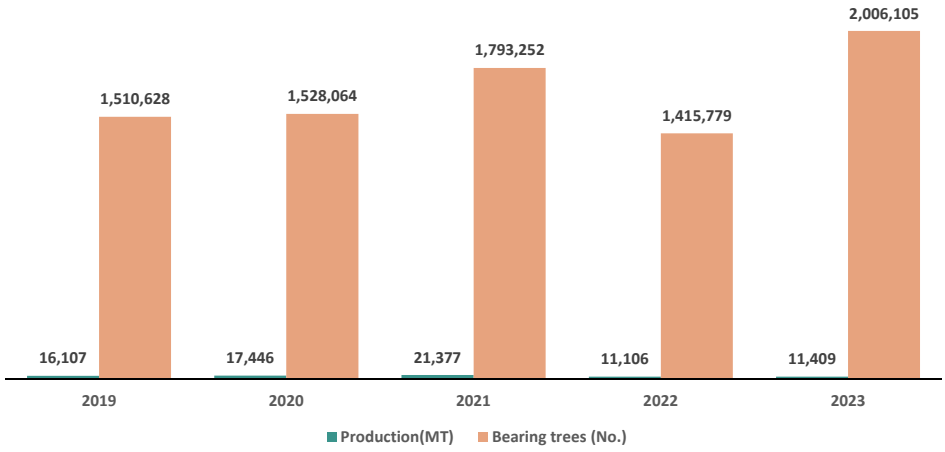


Figure 2.23: Production and bearing trees of areca nut from 2019-2023

The higher level of areca nut production at the national level in 2023 was due to increase in bearing number of trees (Figure 2.23) to 2,006,105 (more 590,326 trees than in 2022). Sarpang dzongkhag alone reported 358,847 increase in the bearing trees, more than three-fifth of the total increase in the bearing trees. Dagana and Samtse dzongkhags reported, respectively, a 117,073 and 85,995 number of increase in the bearing trees than in 2022. The number of growers also increased from 11,357 households in 2022 to 13,079 households in 2023 (Figure 2.24).

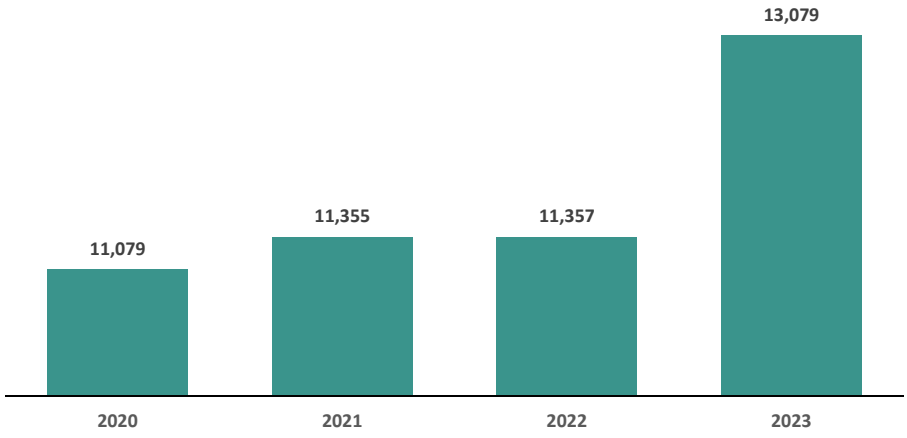


Figure 2.24: Areca nut growers from 2020-2023

Table 2.33: Areca nut production by Dzongkhag

Dzongkhag	Number of Grower	Total Trees	Bearing Trees	Production (MT)
Bumthang	-	-	-	-
Chhukha	978	363,102	111,046	545.006
Dagana	1,121	665,574	308,666	1,428.415
Gasa	-	-	-	-
Haa	-	-	-	-
Lhuentse	-	-	-	-
Monggar	104	10,681	906	7.029
Paro	-	-	-	-
Pema Gatshel	520	118,008	14216	73.51
Punakha	-	-	-	-
Samdrup Jongkhar	1,600	331,850	82,680	758.75
Samtse	4,814	1,345,740	527,227	3,914.688
Sarpang	3,323	2,846,063	950,686	4,581.559
Thimphu	-	-	-	-
Trashigang	-	-	-	-
Trashi Yangtse	-	-	-	-
Trongsa	-	-	-	-
Tsirang	214	10,755	1,048	10.425
Wangdue Phodrang	-	-	-	-
Zhemgang	405	46,050	9,630	89.2835
Total	**13,079**	**5,737,823**	**2,006,105**	**11,408.67**

2.5.3 Mandarin

Mandarin is one of the country's largest fresh fruit exports to India and Bangladesh contributing to the economy by generating export revenue. Although the Ministry of Agriculture and Livestock has been providing necessary support to mandarin growers in terms of orchards management, diversification of varieties based on different agro-ecological zones and development of processing and nurseries, growers are still facing many constraints. For example, production of mandarin is experiencing decline due to climate change impacts, more so due to increased pest and disease outbreaks, drought and erratic rainfall, limited knowledge of farm management, etc.

About 21,170 MT of mandarin (Table 2.34) were harvested in 2023. This was 2,703 MT more than in 2022. Figure 2.25 shows the trend in the production of mandarin from 2019 to 2023.

In terms of the per bearing tree yield of mandarin, it was recorded at 24 kg per tree in 2023, less 1 kg than in 2022. Major mandarin producing Dzongkhags– Dagana harvested 4,691 MT (more 1204 MT than in 2022), Samdrup Jongkhar harvested 2,654 MT (more 16 MT than in 2022) and Tsirang harvested 3,098 MT (more 42 MT than in 2022) in 2023.

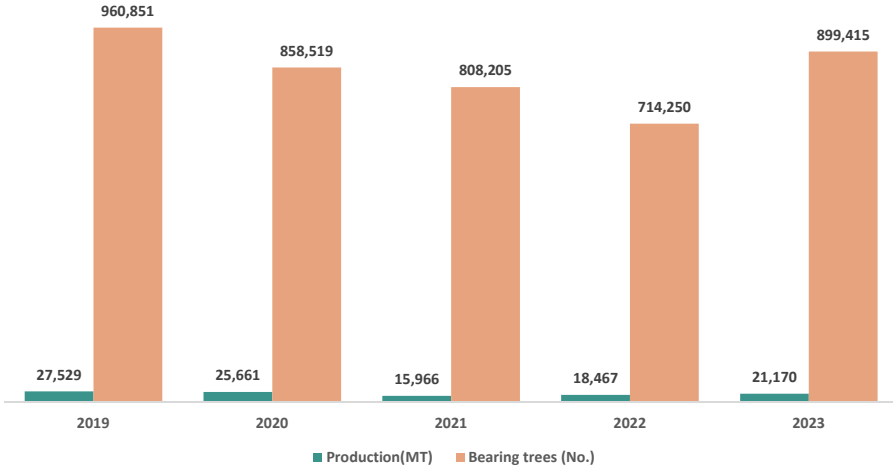


Figure 2.25: Production and bearing trees of mandarin from 2019-2023

In terms of the yield per bearing tree, Dagana recorded at 30 kg (more 3 kg than in 2022), Samdrup Jongkhar at 18 kg (less 10 kg than in 2022) and Tsirang at 40 kg (less 3 kg than in 2022). The higher level of mandarin production in 2023 was due to an increase in the number of bearing trees to 899,415(more 185,165 than in 2022). Furthermore, the number of mandarin growers increased in 2023 from 23,817 in 2022 to 26,963 households (Figure 2.26).

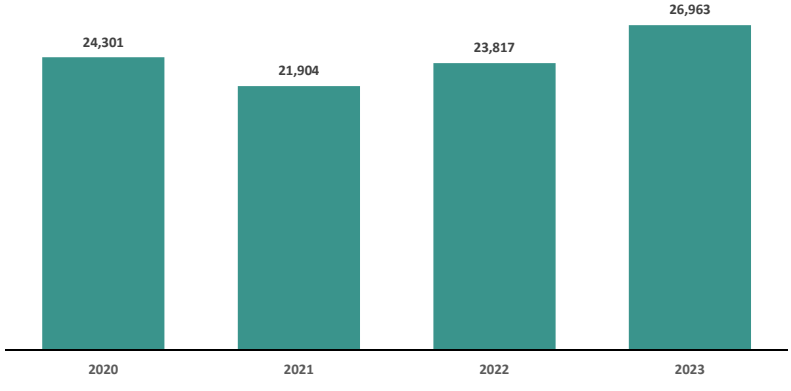


Figure 2. 26: Mandarin growers from 2020-2023

Table 2. 34: Mandarin production by Dzongkhag and FMCL

Dzongkhag	Number of Grower	Total Trees	Bearing Trees	Production (MT)
Bumthang	-	-	-	-
Chhukha	1,706	150,671	75,250	693.25
Dagana	2,907	305,591	154,505	4,690.77
Gasa	10	38	2	0.00
Haa	84	5,142	2,197	5.76
Lhuentse	804	20,307	12,102	310.00
Monggar	3,155	130,484	58,266	1,612.43
Paro	10	47	5	0.02
Pema Gatshel	2,125	210,749	123,537	1,534.64
Punakha	1,523	22,579	13,022	284.75
Samdrup Jongkhar	1,916	226,359	111,688	2,653.67
Samtse	2,628	151,510	60,484	1,115.81
Sarpang	1,378	87,197	56,369	1,828.23
Thimphu	4	6	5	0.02
Trashigang	2,327	48,948	25,091	455.95
Trashi Yangtse	1,015	20,513	10,969	389.75
Trongsa	658	20,088	8,677	148.78
Tsirang	2,349	130,837	76,478	3,097.99
Wangdue Phodrang	891	11,416	5,611	140.40
Zhemgang	1,473	204,837	105,157	2,205.30
FMCL	-	-	-	2.26
Total	**26,963**	**1,747,319**	**899,415**	**21,169.78**

2.5.4 Watermelon, Dragon fruit and Kiwi

There has been increasing demand for seed and seedlings for newly introduced or promotional fruit crops in the country. Cultivation of kiwi and dragon fruits are picking up and mass cultivation is happening in many Dzongkhags.

About 45 MT of watermelon (Table 2.35) were harvested in 2023. This was 49 MT less than in 2022. The per acre yield of watermelon was recorded at 2,400 kg in 2023, less 3 kg than in 2022. Major watermelon producing Dzongkhags– Zhemgang harvested 13 MT (less 35 MT than in 2022), Dagana harvested 3 MT (more 1 MT than in 2022), Trashigang harvested 17 MT, Tsirang harvested 3 MT (less 2 MT than

in 2022) and Monggar harvested 2 MT (less 1 MT than in 2022) in 2023.

About 20 acres of area was reported by the growers under watermelon cultivation. This was 26 acres less than in 2022. From the total, Zhemgang, Trashigang, Monggar and Dagana accounted for more than two-third of the total area under watermelon cultivation in the country.

Table 2.35: Watermelon production by Dzongkhag

Dzongkhag	Number of Grower	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	23	0.16	0.16	0.35
Chhukha	11	0.07	0.06	0.14
Dagana	38	2.61	2.50	3.36
Gasa	9	0.08	0.03	0.08
Haa	1	0.04	0.02	0.02
Lhuentse	12	0.11	0.10	0.11
Monggar	41	2.31	2.21	2.08
Paro	17	0.35	0.32	0.75
Pema Gatshel	17	0.55	0.53	0.86
Punakha	7	0.22	0.22	0.50
Samdrup Jongkhar	10	0.71	0.59	1.13
Samtse	5	0.37	0.37	0.97
Sarpang	3	0.06	0.06	0.05
Thimphu	1	0.01	0.01	0.01
Trashigang	74	4.18	3.57	17.18
Trashi Yangtse	22	0.47	0.35	1.48
Trongsa	11	0.17	0.17	0.13
Tsirang	58	2.25	2.00	2.72
Wangdue Phodrang	7	0.20	0.20	0.28
Zhemgang	54	5.34	5.27	12.77
Total	**421**	**20.24**	**18.72**	**44.94**

About 4 MT of dragon fruit (Table 2.36) were harvested in 2023. The per bearing tree yield of dragon fruit was recorded at 3 kg in 2023, 1 kg less than in 2022. Not many Dzongkhags reported to grow dragon fruits in 2023. Of those reported, Samdrup Jongkhar and Monggar dzongkhags accounted for the larger share of the production in 2023.

Table 2.36: Dragon fruit production by Dzongkhag

Dzongkhag	Number of Grower	Total Trees	Bearing Trees	Production (MT)
Bumthang	-	-	-	-
Chhukha	132	601	5	0.01
Dagana	275	3,336	310	0.18
Gasa	-	-	-	-
Haa	-	-	-	-
Lhuentse	55	207	19	0.05
Monggar	335	2,462	471	1.90
Paro	-	-	-	-
Pema Gatshel	1,334	7,668	129	0.28
Punakha	219	606	14	0.04
Samdrup Jongkhar	817	3,420	240	1.08
Samtse	655	2,168	121	0.24
Sarpang	467	1,856	102	0.16
Thimphu	-	-	-	-
Trashigang	239	788	19	0.09
Trashi Yangtse	128	300	21	0.04
Trongsa	71	854	-	-
Tsirang	512	3,460	177	0.40
Wangdue Phodrang	80	401	3	0.01
Zhemgang	161	655	5	0.01
Total	**5,480**	**28,782**	**1,636**	**4.49**

Country recorded 34 MT (Table 2.37) of kiwi production in 2023. This was 8 MT more than in 2022. Tsirang, Dagana and Chhukha dzongkhags reported more than 50 percent of the total kiwi production in 2023. The detailed productions of other fruit crops are provided in Annex Table A2.22 to Table A2.40.

Table 2.37: Kiwi production by Dzongkhag

Dzongkhag	Number of Growers	Production (MT)
Bumthang	201	0.39
Chhukha	349	6.38
Dagana	473	5.47
Gasa	24	0.09
Haa	6	0.00
Lhuentse	167	0.89
Monggar	433	0.83
Paro	244	0.91
Pema Gatshel	359	0.80
Punakha	111	1.26
Samdrup Jongkhar	164	0.78
Samtse	133	0.76
Sarpang	89	0.45
Thimphu	166	0.51
Trashigang	854	3.75
Trashi Yangtse	415	1.48
Trongsa	32	0.02
Tsirang	482	8.57
Wangdue Phodrang	24	0.22
Zhemgang	59	0.35
Total	**4,785**	**33.91**

2.6 Mushroom

The National Strategy for Development of Statistics emphasizes the importance of utilizing administrative data and fostering coordination between various agencies to enhance the quality of statistical data. In alignment with this strategy, the mushroom production data for IALC 2023 has been sourced from the National Mushroom Centre.

Table 2.38 presents the mushroom production by Dzongkhag. The yield of fresh shiitake mushrooms is estimated by using the number of logs inoculated in the previous three financial years (assuming they are not discarded by the farmer owing to disease or other reasons) and assuming each log produces 500 grams per year.

Logs inoculated in 2023-2024 are not considered since shiitake mushrooms

typically begin fruiting only after about 12-18 months post-inoculation. A total production of about 156 MT of fresh shiitake was estimated in 2023.

The yield of Oyster mushroom is estimated based on the spawn supplied by National Mushroom Centre (NMC) and Agriculture Research Development Centres (ARDCs). Each bottle can produce about two bags of substrate, and each bag typically yields 1 kg of fresh oyster mushrooms. A total production of about 195 MT of oyster mushroom was estimated in 2023.

Table 2.38: Oyster and shiitake production by Dzongkhag

Dzongkhag	Oyster mushroom (MT)	Fresh shiitake (MT)
Bumthang	2.774	-
Chhukha	10.142	14.665
Dagana	1.388	0.975
Gasa	2.928	1.55
Haa	1.352	6.0425
Lhuentse	5.82	2.952
Monggar	34.258	7.9845
Paro	49.254	32.9325
Pema Gatshel	2.756	2.01
Punakha	12.726	2.1
Samdrup Jongkhar	0.012	0.9
Samtse	1.914	-
Sarpang	2.11	2.03
Thimphu	21.034	30.2465
Trashigang	7.736	11.3785
Trashi Yangtse	1.424	4.043
Trongsa	4.406	9.498
Tsirang	11.55	5.965
Wangdue Phodrang	19.294	12.258
Zhemgang	2.19	8.0385
Total	**195.068**	**155.569**

CHAPTER 3: LIVESTOCK POPULATION

3.1 Introduction

The IALC 2023 collected information on the livestock population and production in the country. This chapter presents livestock population statistics by breed and type, herd structure and their dynamics during the reference period. The census collected detailed statistics on the number of animals by breed, age and sex. For herd dynamics, entries and exits of animals from the herd during the reference period were also recorded. Other information collected included the number of births (calf<1-year-old) and the number of animal deaths during the reference period.

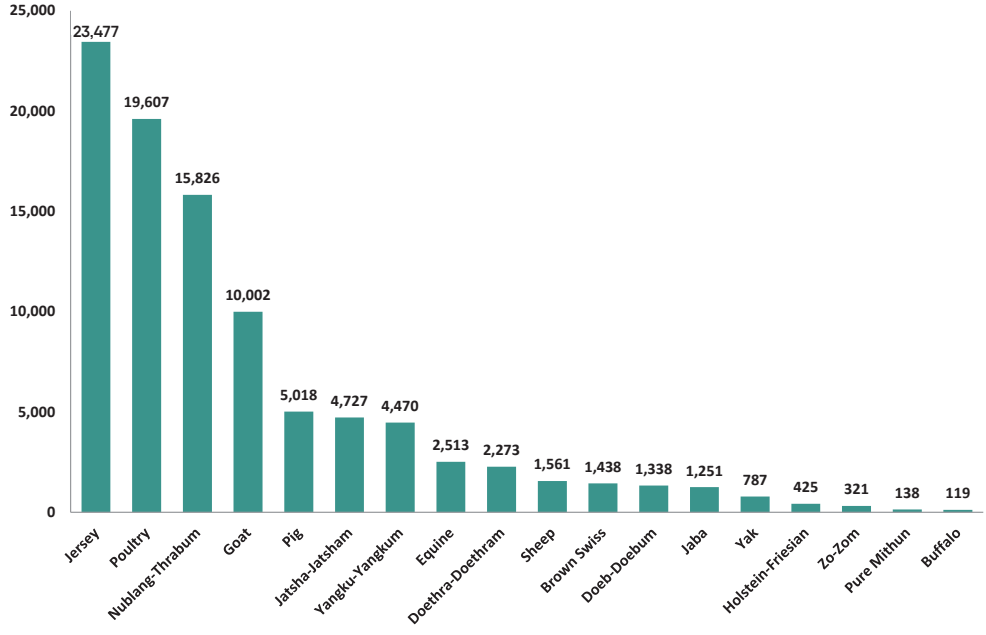


Figure 3.1: Livestock holding by type

3.2 Livestock holdings

As per the IALC 2023, a total of 51,544 Livestock holders (Table 3.1) were recorded. Of these 50,583 (98 percent) were households and 961 (2 percent) consisted of non-household. The Dzongkhags with the highest number of households were recorded in Samtse at 16.5 percent followed by Trashigang at 8.9 percent and Monggar with 8.7 percent.

For the non-households the highest was recorded in Samtse at 13.6 percent followed by Sarpang at 12.8 percent and Wangdue Phodrang at 12.2 percent. Additionally, 15 non-household (Government farms) were recorded in the census.

Regarding the livestock type, the majority of holders raised Jersey cattle (23,477), followed by poultry (19,607) and Nublang-Thrabum (15,826). Figure 3.1 depicts the livestock holders in 2023 by type of livestock.

Among dzongkhags, the highest jersey holders were recorded in Monggar (13.8 percent), followed by Trashigang (11.2 percent) and Sarpang (8.9 percent). For poultry holders, Samtse (28.3 percent) has the highest holdings followed by Dagana (12.8 percent) and Chhukha (10.7 percent) (Figure 3.2).

Table 3.1: Livestock holders by Dzongkhag and holder type

Dzongkhag	Household sector	Non-household sector	TOTAL
Bumthang	1,057	18	1,075
Chhukha	3,440	66	3,506
Dagana	3,846	81	3,927
Gasa	485	-	485
Haa	907	7	914
Lhuentse	1,538	8	1,546
Monggar	4,418	49	4,467
Paro	1,495	36	1,531
Pema Gatshel	2,092	8	2,100
Punakha	1,583	57	1,640
Samdrup Jongkhar	2,802	22	2,824
Samtse	8,346	131	8,477
Sarpang	3,649	123	3,772
Thimphu	697	90	787
Trashigang	4,519	15	4,534
Trashi Yangtse	1,579	41	1,620
Trongsa	1,021	28	1,049
Tsirang	3,259	50	3,309
Wangdue Phodrang	2,328	117	2,445
Zhemgang	1,522	14	1,536
Total	**50,583**	**961**	**51,544**

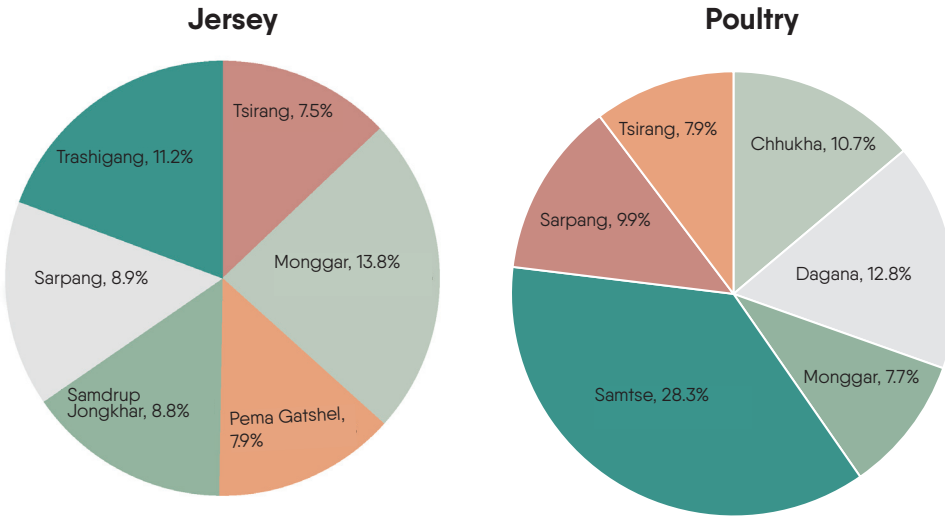


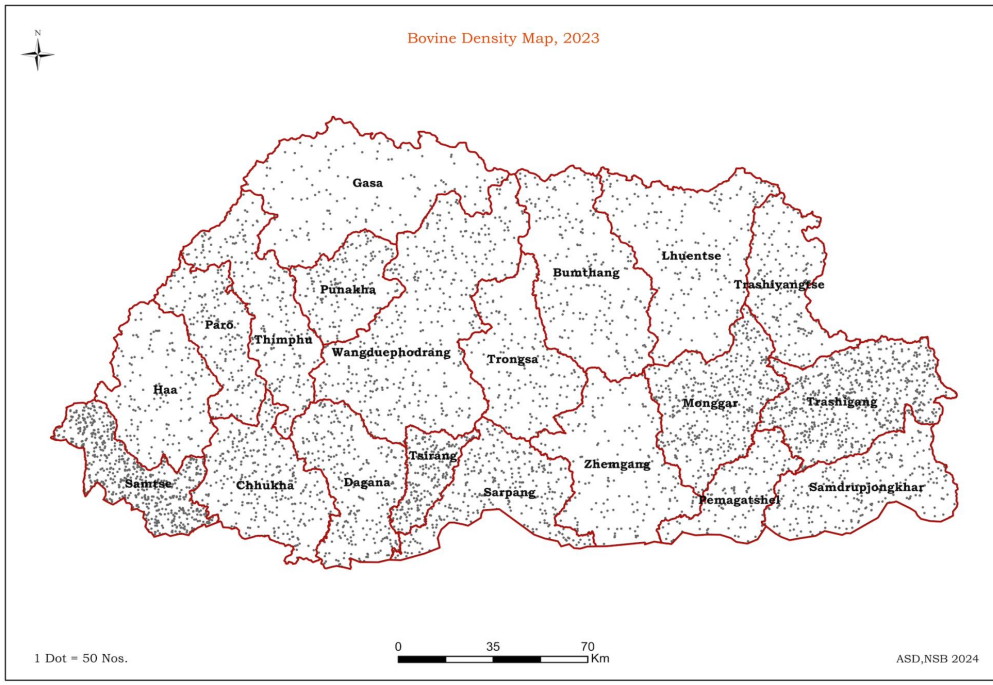
Figure 3.2: Share of Jersey and poultry holders by major holding Dzongkhags

3.3 Livestock herd structure

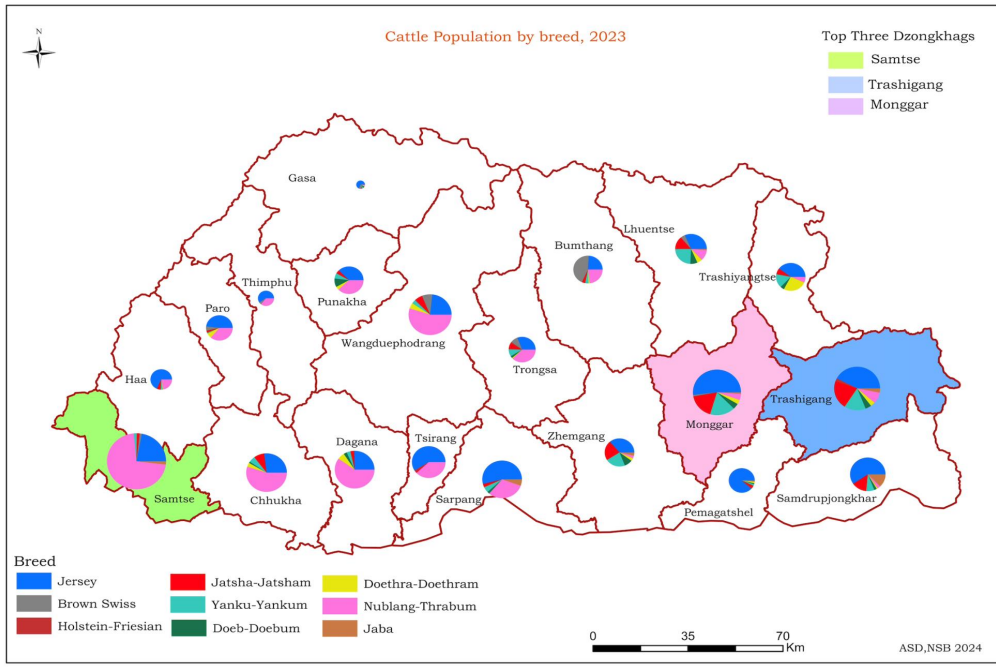
The Livestock play a crucial role in Bhutanese farming with a diverse range of animals being raised by farmers, including both bovine and other species. The map 3.1 depicts the bovine density across the country based on IALC 2023, with an estimated density of 7 animals per square kilometre. Samtse recorded the highest bovine density at 25 animals per square kilometre, followed by Tsirang (16 animals per square kilometre) and Trashigang (14 animals per square kilometre).

The Table 3.2 provides a summary of the livestock population by breed type in 2023 across Dzongkhags. The IALC 2023 recorded a total of 222,597 cattle (Table 3.2), marking a 13 percent decrease from 2022. The Map 3.2 depicts the details of the cattle population by dzongkhag and breed type. Samtse, Trashigang, and Monggar recorded the highest cattle numbers in 2023.

Monggar, Lhuentse, Trashigang, Trashi Yangtse, Samdrup Jongkhar, Pema Gatshel, Haa, Paro, Gasa, Thimphu, Tsirang, Sarpang and Zhemgang are dominant holders of Jersey cattle. Wangdue Phodrang, Punakha, Trongsa, Dagana, Chhukha and Samtse are the main holders of Nublang-Thrabum cattle, while Bumthang is dominant of Brown-Swiss holders. Figure 3.3 depicts the average cattle population from 2006 to 2023 indicating a consistent decline over this period.



Map 3.1: Bovine livestock density by Dzongkhag



Map 3.2: Cattle population by Dzongkhag and breed type

Table 3.2: Livestock population by Dzongkhag and Government Farms

(Number)

Dzongkhag	Bovine population					Other livestock population				
	Cattle	Mithun	Yak	Zo-Zom	Buffalo	Equine	Pig	Poultry	Sheep	Goat
Bumthang	7,841	1	2,369	8	-	161	-	2,098	77	24
Chhukha	15,126	4	-	-	-	98	3,696	88,833	650	7,845
Dagana	14,408	5	-	-	30	118	5,576	74,461	117	13,112
Gasa	697	-	5,136	-	-	2,700	-	330	-	1
Haa	4,257	5	3,197	-	-	270	58	2,168	-	20
Lhuentse	9,139	6	207	66	-	663	7	9,984	22	11
Monggar	21,156	27	-	-	-	259	57	27,290	1	57
Paro	6,502	-	2,764	-	-	1,390	411	23,258	-	29
Pema Gatshel	6,163	1	-	-	-	67	95	11,392	-	19
Punakha	7,715	4	-	-	-	331	59	10,309	-	54
Samdrup Jongkhar	11,519	18	2	31	-	97	593	21,091	68	1,382
Samtse	31,954	7	-	-	247	61	4,740	125,018	5,854	19,105
Sarpang	14,363	4	-	-	19	118	3,760	164,740	697	7,412
Thimphu	2,371	-	8,746	-	-	1,904	210	27,257	3	22
Trashigang	19,279	32	4,111	7,425	-	732	100	17,060	1,219	106
Trashi Yangtse	7,913	3	126	43	-	554	173	7,328	-	21
Trongsa	6,665	3	112	-	-	35	16	16,644	25	39
Tsirang	10,316	4	-	-	126	29	6,156	132,106	54	11,318
Wangdue Phodrang	16,919	12	2,793	11	-	273	1,739	19,583	426	132
Zhemgang	8,032	8	-	-	-	257	263	20,321	-	68
Govt. Farms	262	119	136	-	-	-	1,916	13,915	198	-
Total	**222,597**	**263**	**29,699**	**7,584**	**422**	**10,117**	**29,625**	**819,335**	**9,411**	**60,798**

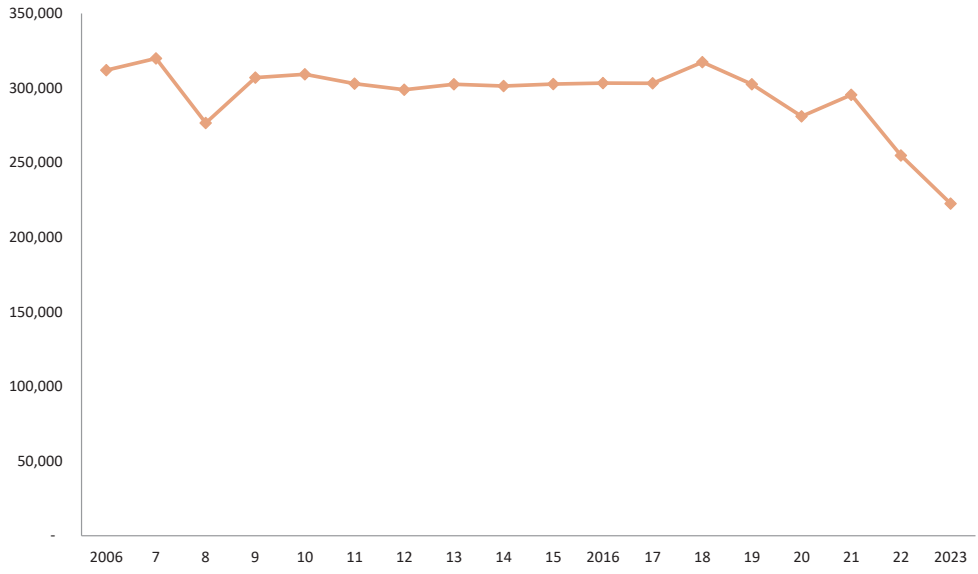


Figure 3.3: Total number of cattle, 2006 to 2023

3.3.1 Milch population

Table 3.3 illustrates the distribution of improved and other milch populations. In recent years, the population of improved milch breeds such as Jersey and Brown Swiss cattle has increased (Figure 3.4), whereas the milch population of local breeds has decreased (Figure 3.5). This trend indicates a growing preference for improved livestock breeds among small-scale livestock holders in the country.

Map 3.3 illustrates the geographic distribution of the bovine milch population by breed in 2023. Samtse, Chhukha, Dagana, and Wangdue Phodrang are dominant holders of Thrabum milch cattle.

Thimphu and Gasa are dominant in milch yak holdings, while Bumthang dominates in milch Brown Swiss cattle. The remaining dzongkhags dominantly hold milch Jersey cattle. For instance, Tsirang, Sarpang, Monggar, Pema Gatshel, and Samdrup Jongkhar collectively account for over 50 percent of milch Jersey cattle compared to other breeds.

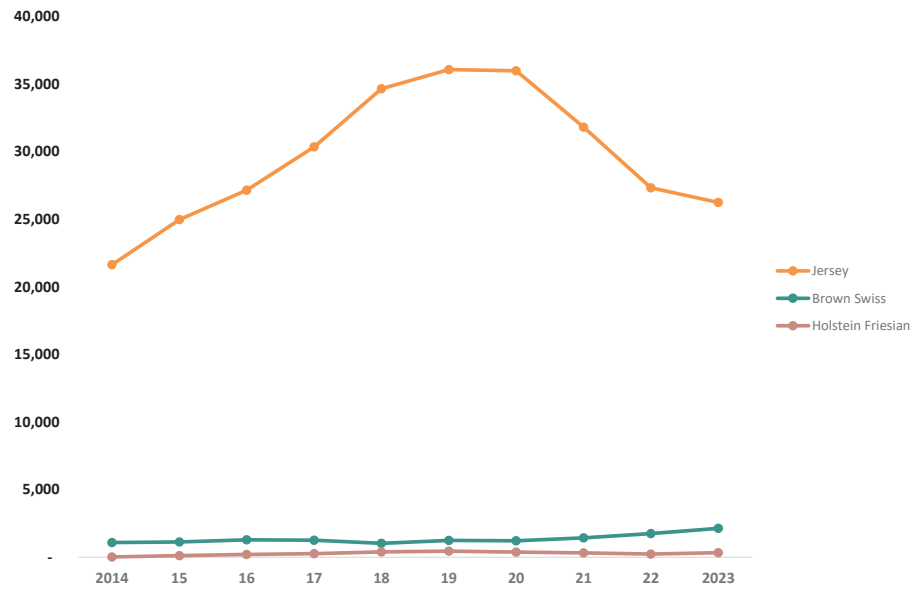


Figure 3.4: Total number of improved milch population by breed type, 2014 to 2023

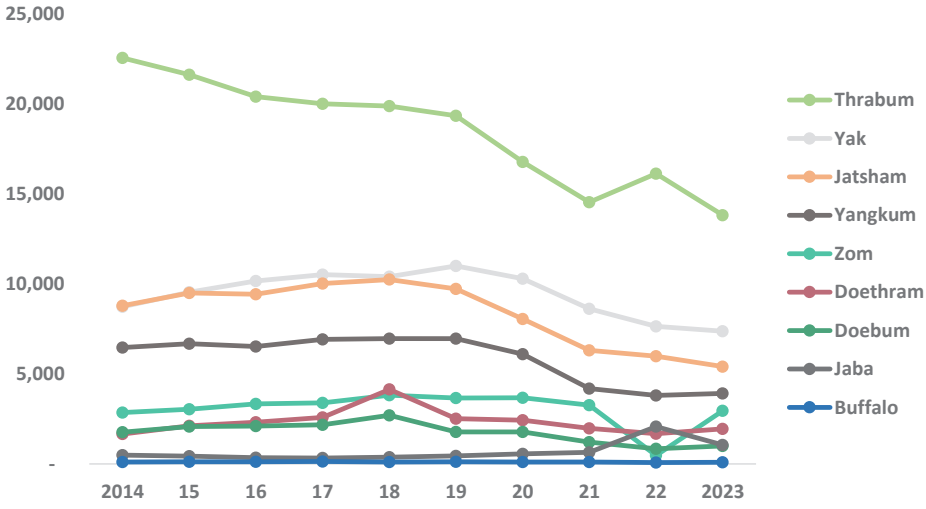
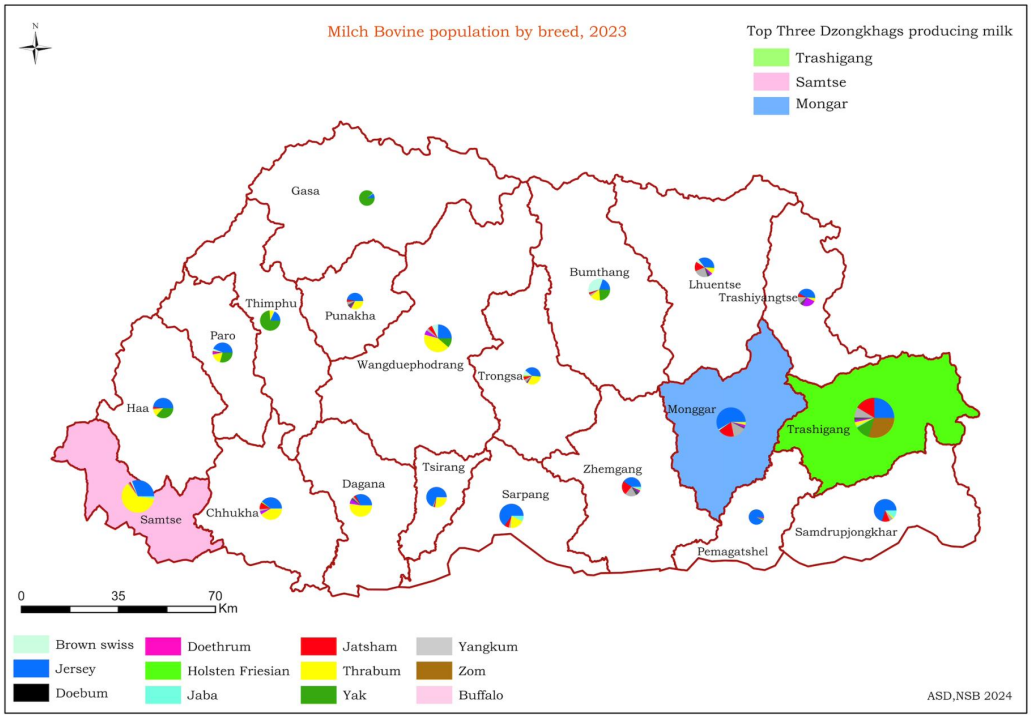


Figure 3.5: Total number of local milch population by breed type, 2014 to 2023



Map 3.3: Bovine milch population by Dzongkhag and breed type

Table 3.3: Bovine milch population by Dzongkhag and Government Farms

(Number)

Dzongkhag	Jersey	Brown Swiss	Holstein-Friesian	Jatsham	Yangkum	Doebum	Doethram	Thrabum	Jaba	Mithun	Yak	Zom	Buffalo
Bumthang	574	1,019	7	90	87	8	23	451	-	-	695	3	-
Chhukha	1,216	24	53	303	99	20	140	1,277	-	-	-	-	-
Dagana	1,023	2	1	100	79	80	207	1,641	2	-	-	-	6
Gasa	143	16	-	5	13	7	9	4	-	-	1,304	-	-
Haa	1,215	4	6	77	44	9		274	-	-	928	-	-
Lhuentse	830	128	7	371	552	108	110	222	23	-	32	16	-
Monggar	3,100	68	3	967	763	84	140	174	45	-	-	-	-
Paro	1,089	94	5	42	12	7	99	435	-	-	725	-	-
Pema Gatshel	1,339	1	35	21	22	15	24	4	12	-	-	-	-
Punakha	790	2	1	79	107	111	47	552	-	-	-	-	-
Samdrup Jongkhar	2,203	4	1	364	164	24	28	64	349	-	-	2	-
Samtse	2,012	104	29	110	97	19	13	4,046	131	-	-	-	44
Sarpang	2,323	1	4	219	87	35	24	677	260	-	-	-	5
Thimphu	458	37	3	2	6	-	-	170	-	-	1,889	-	-
Trashigang	2,469	61	99	1,596	832	177	196	337	120	-	1,184	2,921	-
Trashi Yangtse	795	3	1	124	250	98	481	113	11	-	20	12	-

Trongsa	723	181	47	118	103	35	20	602	-	-	26	-	-
Tsirang	1,790	8	31	30	4	3	37	677	2	-	-	-	35
Wangdue Phodrang	1,183	355	4	250	145	13	251	2,050	-	-	539	-	-
Zhemgang	914	15	2	540	444	147	84	52	94	-	-	-	-
Govt. Farms	62	13	-	-	-	-	-	-	-	23	30	-	-
Total	**26,251**	**2,140**	**339**	**5,408**	**3,910**	**1,000**	**1,951**	**13,822**	**1,049**	**23**	**7,372**	**2,954**	**90**

3.3.2 Improved livestock breed profile

Table 3.4 provides the distribution of the Brown Swiss population by dzongkhag in 2023. The census recorded a total of 7,382 Brown Swiss cattle, with Bumthang dzongkhag accounting for 46.4 percent, followed by Wangdue Phodrang with 17.8 percent. The census recorded 1,438 Brown Swiss holders across the country.

Table 3.4: Brown Swiss population by Dzongkhag and Government Farms

(Number)

Dzongkhag	No. of Holder	Calf <1 year old		Heifer	Milch	Dry	Infertile/ Sterile	Total Bull	Breeding Bull	Bull-ock	Total
		Male	Female								
Bumthang	453	397	527	601	1,019	226	107	550	62	-	3,427
Chhukha	25	13	14	34	24	3	-	17	2	-	105
Dagana	5	2	2	1	2	2	-	4	-	-	13
Gasa	10	9	7	10	16	5	3	21	-	-	71
Haa	7	1	2	2	4	1	-	2	1	-	12
Lhuentse	141	33	52	114	128	22	29	52	16	-	430
Monggar	53	29	34	44	68	19	11	16	7	-	221
Paro	116	51	36	60	94	1	70	45	1	-	357
Pema Gatshel	1	-	1	-	1	-	-	-	-	-	2
Punakha	3	-	1	2	2	2	-	2	-	-	9
Samdrup Jongkhar	8	1	1	5	4	1	-	2	2	-	14
Samtse	108	43	48	63	104	49	4	64	2	-	375
Sarpang	6	-	1	5	1	-	-	1	-	-	8
Thimphu	32	15	21	29	37	2	1	15	7	-	120
Trashigang	50	36	13	29	61	8	3	16	4	-	166
Trashi Yangtse	6	1	4	5	3	-	-	6	1	-	19
Trongsa	157	87	94	136	181	37	9	58	10	-	602
Tsirang	13	3	8	5	8	5	-	10	-	-	39
Wangdue Phodrang	228	171	201	255	355	114	63	157	26	-	1,316
Zhemgang	15	6	9	1	15	2	-	4	-	-	37
Govt. Farms	1	2	8	9	13	4	-	3	-	-	39
Total	**1,438**	**900**	**1,084**	**1,410**	**2,140**	**503**	**300**	**1,045**	**141**	**-**	**7,382**

Table 3.5 displays the Jersey cattle population by dzongkhag in 2023. The total number of Jersey cattle in the country was recorded at 87,296. Due to the inability of holders to distinguish pure breeds from cross breeds Jerseys, the census did not differentiate individual Jersey breeds. Monggar (12.6 percent), Trashigang (9.3 percent), and Sarpang (8.8 percent) recorded the highest numbers of Jersey cattle among dzongkhags. Overall, there were 23,477 Jersey cattle holders in the country.

Table 3.5: Jersey population by Dzongkhag and Government Farms

(Number)

Dzongkhag	No. of Holder	Calf <1 year old		Heifer	Milch	Dry	Infer-tile/ Sterile	Total Bull	Breeding Bull	Bull-ock	Total
		Male	Female								
Bumthang	294	208	267	307	574	162	85	265	50	-	1,868
Chhukha	919	599	589	721	1,216	256	57	561	69	-	3,999
Dagana	1,087	497	519	765	1,023	261	43	544	42	-	3,652
Gasa	95	70	58	82	143	15	8	103	4	-	479
Haa	613	360	371	478	1,215	140	83	225	31	-	2,872
Lhuentse	673	280	406	684	830	256	49	365	71	-	2,870
Monggar	3,237	1,095	1,382	2,808	3,100	693	721	1,160	243	-	10,959
Paro	725	476	498	411	1,089	167	122	342	28	-	3,105
Pema Gatshel	1,847	461	680	1,334	1,339	290	345	947	34	-	5,396
Punakha	739	428	479	598	790	151	86	349	36	-	2,881
Samdrup Jongkhar	2,075	843	1,032	1,381	2,203	516	192	668	59	-	6,835
Samtse	1,716	924	1,034	1,512	2,012	590	84	836	103	-	6,992
Sarpang	2,090	1,091	1,265	1,522	2,323	426	93	982	79	-	7,702
Thimphu	305	157	197	271	458	102	56	134	37	-	1,375
Trashigang	2,632	939	1,164	1,808	2,469	698	252	777	151	-	8,107
Trashi Yangtse	809	368	418	688	795	221	147	497	75	-	3,134
Trongsa	382	288	333	335	723	113	30	237	51	-	2,059
Tsirang	1,752	825	950	1,062	1,790	292	70	994	33	-	5,983
Wangdue Phodrang	740	569	621	645	1,183	247	63	585	79	-	3,913
Zhemgang	745	409	427	532	914	172	57	381	101	-	2,892
Govt. Farms	2	6	37	97	62	16	-	5	-	-	223
Total	**23,477**	**10,893**	**12,727**	**18,041**	**26,251**	**5,784**	**2,643**	**10,957**	**1,376**	**-**	**87,296**

The census in 2023 recorded 1,127 Holstein Friesian cattle from 425 holders across the country (Table 3.6). The highest numbers of Holstein Friesian cattle were recorded in Trashigang (35.0 percent), followed by Wangdue Phodrang (16.9 percent), and Chhukha (11.8 percent).

Table 3.6: Holstein Friesian population by Dzongkhag

(Number)

Dzongkhag	No. of Holder	Calf <1 year old	Heifer	Milch	Dry	Infertile/ Sterile	Total Bull	Breeding Bull	Bull-ock	Total
		Male	Female							
Bumthang	5	3	2	7	2	1	3	1	-	23
Chhukha	23	23	29	53	8	-	6	3	-	133
Dagana	1	-	1	1	-	-	-	-	-	2
Gasa	-	-	-	-	-	-	-	-	-	-
Haa	4	3	3	6	2	-	1	-	-	15
Lhuentse	5	2	3	7	-	-	-	-	-	16
Monggar	5	3	1	3	1	-	-	-	-	10
Paro	4	2	2	5	-	-	-	-	-	10
Pema Gatshel	37	10	19	35	3	-	4	1	-	87
Punakha	5	-	2	1	-	1	-	-	-	6
Samdrup Jongkhar	2	-	2	1	-	-	-	-	-	3
Samtse	25	6	12	29	10	-	3	-	-	70
Sarpang	6	4	1	4	1	-	2	2	-	15
Thimphu	4	-	1	3	-	-	2	2	-	7
Trashigang	185	24	52	99	19	11	41	19	-	394
Trashi Yangtse	2	1	-	1	-	-	-	-	-	3
Trongsa	35	20	28	47	3	1	16	-	-	117
Tsirang	75	20	24	31	8	1	72	-	-	190
Wangdue Phodrang	1	2	4	4	5	-	-	-	-	19
Zhemgang	1	-	2	2	1	-	-	-	-	7
Total	**425**	**123**	**188**	**339**	**63**	**15**	**150**	**28**	**-**	**1,127**

3.3.3 Local bovine livestock breed profile

The local bovine livestock breeds commonly found in rural areas include jatsha-jatsham, yangku-yangkum, doeb-doebum, doethra-doethram, nublang-thrabum, jaba, mithun, yak, zo-zom, and buffalo.

According to the census data, there were a total of 18,593 jatsha-jatsham, which is a decrease of 20.5 percent from the previous year; 17,394 yangku-yangkum, a decrease of 5.6 percent; 6,002 doeb-doebum, an increase of 2.8 percent; 7,549 doethra-doethrum, a decrease of 14.1 percent; 72,965 nublang-thrabum, a decrease of 19.7 percent; and 4,289 jaba.

Additionally, the census recorded 263 mithun, marking a decrease of 12.3 percent; 29,699 yaks, a decrease of 2.1 percent; 7,584 zo-zom, an increase of 2.0 percent; and 422 buffalo, an increase of 27.5 percent from the previous year. Detailed information on these livestock breeds by dzongkhag is provided in Annex Tables A3.1 to A3.10.

3.3.4 Other livestock profile

The other non-bovine livestock recorded in the census includes equine, pig, poultry, sheep and goat. The census recorded a total of 10,117 equine, a decrease of 13.3 percent; 29,625 pigs, a decrease of 10.4 percent; 819,335 poultry, a decrease of 16.0 percent; 9,411 sheeps, a decrease of 6.1 percent; and 60,798 goats, an increase of 6.8 percent from the previous year. The details of these livestock by dzongkhag are provided in the Annex Tables A3.11 to A3.15.

3.3.5 Livestock herd dynamics

Understanding livestock herd dynamics is crucial to monitor the movement of animals in and out of the herd for a specific period. According to FAO's guidelines on methods for estimating livestock production and productivity, it is essential to record the following statistics at a minimum:

- Number of births.
- Number of other entries of animals: purchased, received as donation or otherwise acquired.
- Number of animals slaughtered on the farm (including those slaughtered elsewhere but on behalf of the agricultural holding).
- Number of other exits of animals sold, given or otherwise disposed of.

The breakdown of other exits from the farm includes the number of animals sold, of which the number of animals sold for slaughter; the number of animals otherwise disposed of, of which the number of animals disposed for slaughter; the number of dead animals, broken down by causes of death; and other exits, not previously mentioned (stolen or lost animals).

3.3.5.1 Calves less than 1-year-old

The IALC 2023 collected data on calves less than 1 year old, categorized by type. Table 3.7 shows the summary of calves less than 1-year-old in 2023 for improved bovine livestock breeds, by dzongkhag and type.

A total of 25,915 calves were recorded during the year. Bumthang accounted for 9.8 percent, Sarpang for 9.1 percent, and

Trashigang for 8.6 percent, showing the highest numbers of calves born. Jersey calves constituted 91.1 percent of the total calves born for improved bovine livestock.

Table 3.7: Calves less than 1 year by Dzongkhag and improved bovine livestock breed type

(Number)

Dzongkhag	Brown Swiss	Holsten Friesian	Jersey	Total
Bumthang	924	5	475	1,404
Chhukha	27	52	1,188	1,267
Dagana	4	1	1,016	1,021
Gasa	16	-	128	144
Haa	3	6	731	740
Lhuentse	85	5	686	776
Monggar	63	4	2,477	2,544
Paro	87	4	974	1,065
Pema Gatshel	1	29	1,141	1,171
Punakha	1	2	907	910
Samdrup Jongkhar	2	2	1,875	1,879
Samtse	91	18	1,958	2,067
Sarpang	1	5	2,356	2,362
Thimphu	36	1	354	391
Trashigang	49	76	2,103	2,228
Trashi Yangtse	5	1	786	792
Trongsa	181	48	621	850
Tsirang	11	44	1,775	1,830
Wangdue Phodrang	372	6	1,190	1,568
Zhemgang	15	2	836	853
Govt. Farms	10	-	43	53
Total	**1,984**	**311**	**23,620**	**25,915**

In 2023, a total of 36,198 calves less than 1 year old were recorded for local bovine livestock (Table 3.8). The distribution by breed shows that Nublang-Thrabum accounted for 41.4 percent, Yak for 18.5 percent, and Jatsha-Jatsham for 11.3 percent of the total calves. Across dzongkhags, Samtse reported 13.9 percent, Trashigang 11.3 percent, and Wangdue Phodrang 10.0 percent of the total calves during the year.

Table 3.8: Calves aged less than 1 year by Dzongkhag and local bovine livestock breed type

(Number)

Dzongkhag	Buffalo	Doeb-Doe-bum	Doethra-Doe-thrum	Jaba	Jatsha-Jat-sham	Mithun	Nublang-Thrabum	Yak	Yangku-Yang-kum	Zo-Zom	Total
Bumthang	0	36	28	0	80	0	365	536	83	3	1,131
Chhukha	0	87	158	0	309	0	1,493	0	123	0	2,170
Dagana	5	100	238	2	109	0	1,832	0	107	0	2,393
Gasa	0	15	9	0	5	0	4	1,299	11	0	1,343
Haa	0	31	16	0	72	0	247	760	41	0	1,167
Lhuentse	0	258	101	14	276	0	169	47	485	7	1,357
Monggar	0	380	131	34	736	0	156	0	680	0	2,117
Paro	0	18	120	0	46	0	477	716	30	0	1,407
Pema Gatshel	0	14	31	19	25	0	4	0	20	0	113
Punakha	0	114	191	0	76	0	682	0	108	0	1,171
Samdrup Jongkhar	0	84	44	346	419	0	101	0	143	11	1,148
Samtse	47	90	15	168	113	0	4,482	0	130	0	5,045
Sarpang	5	157	19	257	44	0	799	0	228	0	1,509
Thimphu	0	1	0	0	1	0	168	1,784	4	0	1,958
Trashigang	0	287	167	112	750	0	303	918	582	982	4,101
Trashi Yangtse	0	159	606	11	123	0	108	20	268	10	1,305
Trongsa	0	68	27	0	96	0	565	23	116	0	895

Tsirang	40	2	37	0	33	0	676	0	5	0	793
Wangdue Phodrang	0	84	250	0	283	0	2,276	576	139	1	3,609
Zhemgang	0	275	61	92	501	0	63	0	438	0	1,430
Govt. Farms	0	0	0	0	0	17	0	19	0	0	36
Total	**97**	**2,260**	**2,249**	**1,055**	**4,097**	**17**	**14,970**	**6,698**	**3,741**	**1,014**	**36,198**

3.3.5.2 Livestock deaths

The census also collected data on the number of animals exiting the herd due to death, categorized by reasons reported by holders. The top three causes of bovine death in 2023 were diseases, wildlife depredation (such as by tiger or bear), and accidents. Similarly, for other livestock, the primary reasons reported for death were diseases, wildlife depredation, and natural death.

Table 3.9 presents a summary of the actual number of bovine livestock deaths by dzongkhag in 2023. A total of 24,072 bovine livestock deaths were reported, with Wangdue Phodrang (12.3 percent), Trashigang (12.1 percent), and Samtse (9.3 percent) recording the highest numbers among the dzongkhags. Approximately 19,945 of these deaths were cattle, accounting for about 86 percent of the total bovine deaths.

Table 3.9: Bovine livestock death by Dzongkhag

(Number)

Dzongkhag	Cattle	Mithun	Yak	Zo-Zom	Buffalo	Total
Bumthang	1,048	-	251	-	-	1,299
Chhukha	804	-	-	-	-	804
Dagana	1,150	-	-	-	1	1,151
Gasa	90	-	339	-	-	429
Haa	404	-	408	-	-	812
Lhuentse	475	-	31	1	-	507
Monggar	2,021	-	-	-	-	2,021
Paro	554	-	115	-	-	669
Pema Gatshel	552	-	-	-	-	552
Punakha	472	-	-	-	-	472
Samdrup Jongkhar	964	-	2	2	-	968
Samtse	2,229	-	-	-	8	2,237
Sarpang	861	-	-	-	-	861
Thimphu	398	-	1,468	-	-	1,866
Trashigang	1,977	-	478	461	-	2,916
Trashi Yangtse	1,147	-	32	4	-	1,183
Trongsa	830	-	20	-	-	850
Tsirang	634	-	-	-	2	636
Wangdue Phodrang	2,499	-	458	2	-	2,959
Zhemgang	822	-	-	-	-	822
Govt. Farms	14	9	35	-	-	58
Total	**19,945**	**9**	**3,637**	**470**	**11**	**24,072**

Table 3.10 displays the incidence of non-bovine livestock deaths in 2023 by dzongkhag. Poultry accounted for the majority of these deaths, totaling 165,963.

Among poultry deaths, the highest percentages were reported in five dzongkhags: Sarpang (23.4%), Tsirang (15.9%), Samtse (15.7%), Dagana (9.9%), and Chhukha (5.8%).

Table 3.10: Other livestock death by Dzongkhag and Government Farms

(Number)

Dzongkhag	Equine	Pig	Poultry	Sheep	Goat	Total
Bumthang	102	-	149	25	-	276
Chhukha	2	216	9,629	41	597	10,485
Dagana	15	431	16,455	20	1,873	18,794
Gasa	210	-	96	-	-	306
Haa	15	-	1,487	-	6	1,508
Lhuentse	39	-	1,421	22	-	1,482
Monggar	35	9	6,743	-	6	6,793
Paro	43	18	1,048	-	1	1,110
Pema Gatshel	5	29	5,709	-	-	5,743
Punakha	18	3	1,509	-	3	1,533
Samdrup Jongkhar	6	77	6,551	6	186	6,826
Samtse	-	465	26,024	544	3,111	30,144
Sarpang	8	230	38,793	86	889	40,006
Thimphu	194	9	2,893	-	1	3,097
Trashigang	33	14	3,592	156	5	3,800
Trashi Yangtse	95	10	1,692	-	-	1,797
Trongsa	1	4	3,347	4	3	3,359
Tsirang	4	381	26,464	2	1,181	28,032
Wangdue Phodrang	44	121	5,311	46	15	5,537
Zhemgang	48	38	6,086	-	14	6,186
Govt. Farms	-	1,310	964	5	-	2,279
Total	**917**	**3,365**	**165,963**	**957**	**7,891**	**179,093**

CHAPTER 4: LIVESTOCK PRODUCTION

4.1 Introduction

This chapter presents the main livestock products produced in the country either from live or slaughtered and dead animals. Products from slaughtered and dead animals include meat, while products from live animals include milk, butter, cheese, chugo, eggs, honey and fibers, such as wool from sheep and yak.

While most of the holdings in the household sector are able to precisely report on their number of livestock, most do not keep records of their livestock production and are unable to precisely estimate their livestock production. Directly reporting on this production information was found to be difficult and challenging. For example, questions such as "What is the total milk production during the reference period?" was observed as difficult for holders to answer directly. To estimate precisely for the milk production, the number of milch animals, an average milk production in litres per day and the lactation period or the number of days milked were asked to the holders.

As for the meat production, the census gathered information on the number of animal deaths during the reference year and their meat consumed or sold depending on the average animal carcass weight. Furthermore, to account for meat production from the slaughtered animals, the number of animals sold to slaughter houses or slaughtering of animals for self-consumption during the reference year and their average carcass weight were collected from the holders.

Enumerators during the Training of Enumerators (ToE) were also trained to probe with a set of questions instead of simply asking questions that were there in the questionnaire. The interviewing techniques were demonstrated during the training so that enumerators could get a better sense and precise estimation of the production. Estimation of livestock production precisely is a global issue, so FAO recommends asking auxiliary questions to the respondent to enable quality estimation of production amounts. The IALC 2023 collected production data for the following groups of livestock products:

- Dairy production;
- Meat production; and
- Other livestock production.

4.2 Dairy production

Data on dairy production included the quantity of milk, butter, cheese and chugo produced during the reference period. Milk production refers to the total fresh milk produced and covers milk production from all bovine livestock. The milk production was estimated by multiplying the number of milch animals (inclusive of those milking animals as on the census day and those milked-dry during the reference year) with the average milk produced per animal per day and the number of lactating days of

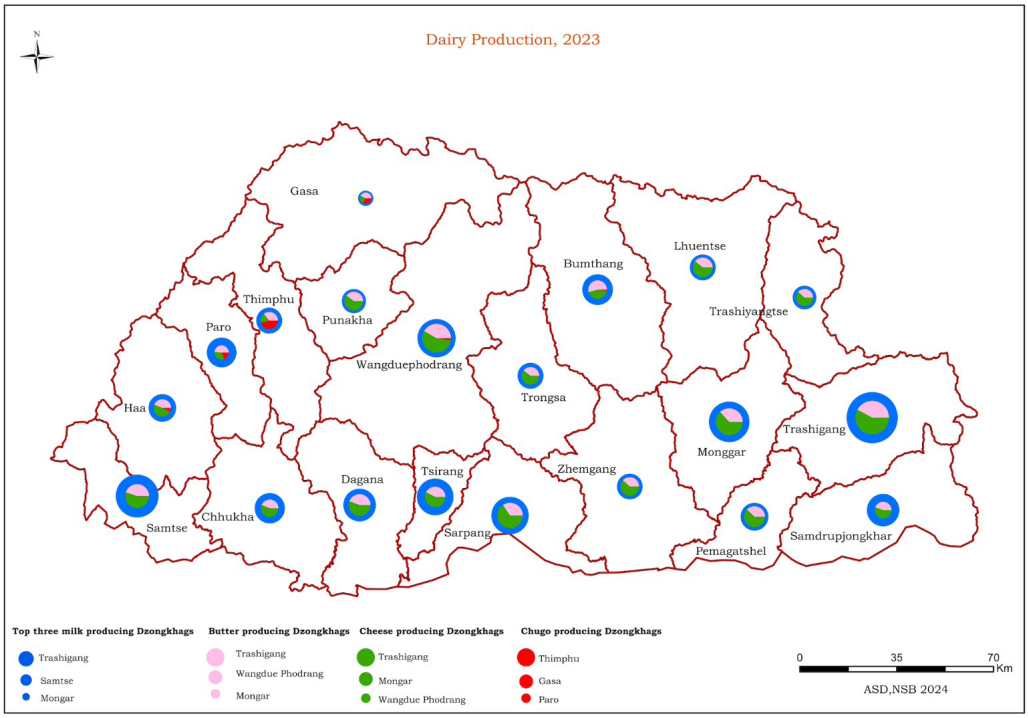
the animal.

The milk produced from other animals, such as goats and sheep, is not included although recommended by the FAO. Due to their less significance to the total Bhutanese economy, the census ignored the collection of data relating milk production from goats and sheep.

Table 4.1 presents dairy production by dzongkhag and government farms in 2023. In terms of dairy production, the economy recorded about 43,829 MT (up 4 percent) of milk; about 1,727 MT (up 15 percent) of butter; about 2,326 MT (down 2 percent) of cheese; and about 132 MT (up 2 percent) of chugo compared to 2022. Map 4.1 shows the share of the dairy production by dzongkhag and by product type in 2023. Across dzongkhags, Trashigang produced the highest milk, butter and cheese in 2023.

Table 4.1: Dairy production by Dzongkhag and Government Farms

Dzongkhag	Milk (MT)	Butter (MT)	Cheese (MT)	Chugo (MT)
Bumthang	1,982.45	88.46	70.85	3.76
Chhukha	1,931.52	63.04	80.58	-
Dagana	2,243.78	99.38	124.86	-
Gasa	490.04	26.76	14.66	21.08
Haa	1,612.72	63.15	70.55	10.94
Lhuentse	1,413.82	72.30	112.16	0.71
Monggar	3,461.95	127.06	218.48	-
Paro	1,866.07	46.95	30.54	18.78
Pema Gatshel	1,626.66	78.81	129.51	-
Punakha	1,232.21	65.07	99.29	-
Samdrup Jongkhar	2,223.52	58.84	74.20	-
Samtse	3,857.19	120.62	148.22	-
Sarpang	2,937.70	106.32	201.85	-
Thimphu	1,414.58	51.13	26.35	65.68
Trashigang	5,502.88	226.14	310.97	0.25
Trashi Yangtse	1,186.53	53.22	85.27	0.15
Trongsa	1,421.58	57.26	88.02	0.53
Tsirang	2,835.67	84.94	115.43	-
Wangdue Phodrang	3,074.13	162.72	217.98	10.07
Zhemgang	1,387.10	63.44	103.30	-
Govt. Farms	126.45	11.86	3.21	0.06
Total	**43,828.51**	**1,727.46**	**2,326.27**	**132.00**



Map 4.1: Dairy production by Dzongkhag

4.2.1 Milk production

Figure 4.1 shows milk production in 2023 by Dzongkhag. According to the census, Trashigang (5,503 MT), Samtse (3,857 MT) and Monggar (3,462) recorded the highest milk production in the country in 2023. The share of the national milk production by Dzongkhag ranged from 1.1 percent in Gasa to 12.6 percent in Trashigang. Samtse and Monggar accounted for 8.8 percent and 7.9 percent, respectively, of the total milk production in the country.

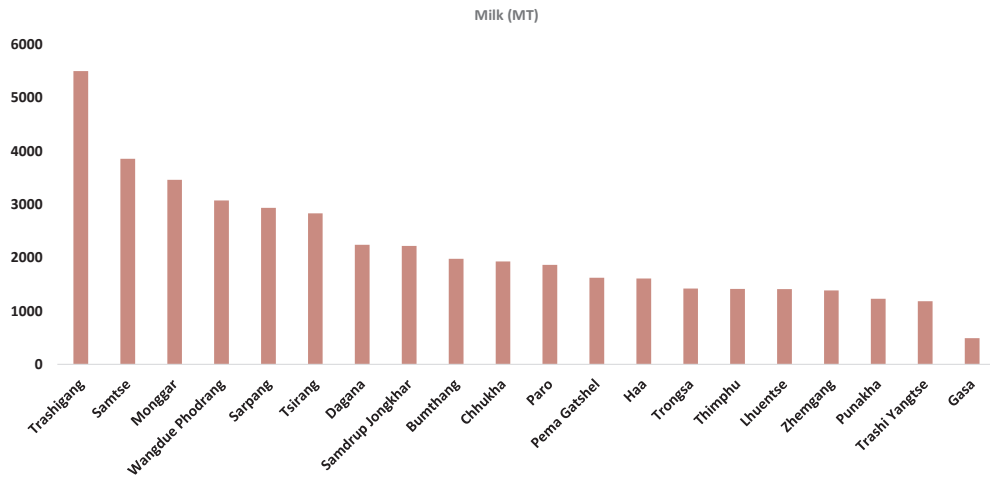


Figure 4.1: Milk production by Dzongkhag

4.2.2 Butter and Cheese production

Figure 4.2 shows that the highest butter and cheese production in 2023 were recorded in Trashigang (butter-226 MT; cheese-311 MT), Wangdue Phodrang (butter-163 MT; cheese-218 MT) and Monggar (butter-127 MT; cheese-218 MT).

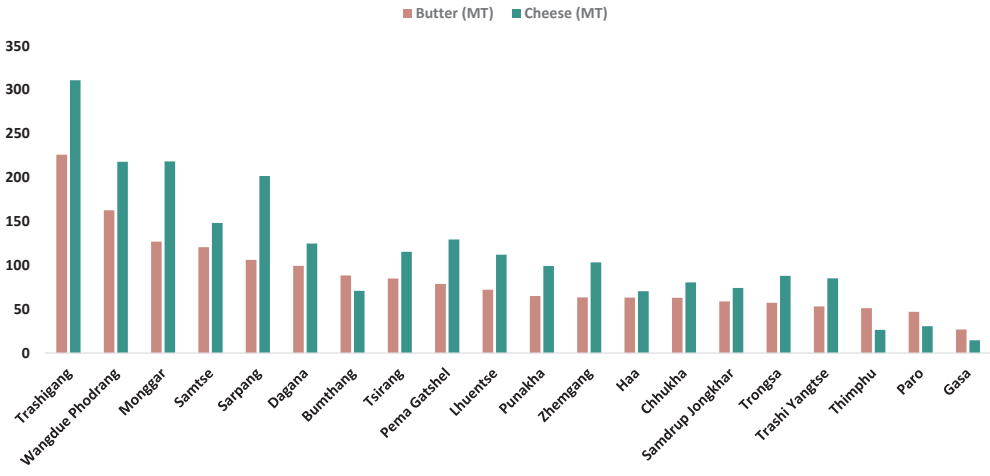


Figure 4.2: Butter and cheese production by Dzongkhag

4.3 Meat production

According to the FAO, meat is defined as the flesh of animals used for food. In production data, meat is normally reported inclusive of bones and exclusive of meat that is unfit for human consumption.

The total meat production in Bhutan was estimated by asking livestock holders about the number of livestock deaths (inclusive of slaughter), livestock diseases, and meat consumed/sold during the reference period. While obtaining information on the number of animals slaughtered on the farm or in other slaughtering points is difficult, the meat produced from slaughtered animals can be obtained directly. For example, some individual holders reported meat production from animals slaughtered for personal consumption during local festivals.

The common data collected to estimate total meat production included the number of deaths, by category of livestock, and their causes of death. The meat production is obtained by multiplying the number of animal deaths whose meat were consumed or sold during the reference year with the average carcass weight per animal. An additional question was asked on the number of sold/slaughtered animals for meat purpose during the reference year and the average carcass weight per animal to estimate for meat production from slaughtered animals.

Furthermore, enumerators during the ToE were also trained to probe, if the household reported livestock deaths during the reference period, about carcass weight, age of the animal and whether or not the meat was consumed. The death of an animal could be due to many reasons, such as disease, wildlife predation, natural death due to old age, etc. Meat produced but unfit for human consumption due to disease was excluded in the census from estimating production statistics.

Figure 4.3 presents the 5-year moving average of meat production from 2006 to 2023 and shows a significantly increasing trend in the production of pork, beef and chicken in recent years. The production of other meats, such as chevon/ mutton, fish and yak meat, show modest or no change over the years.

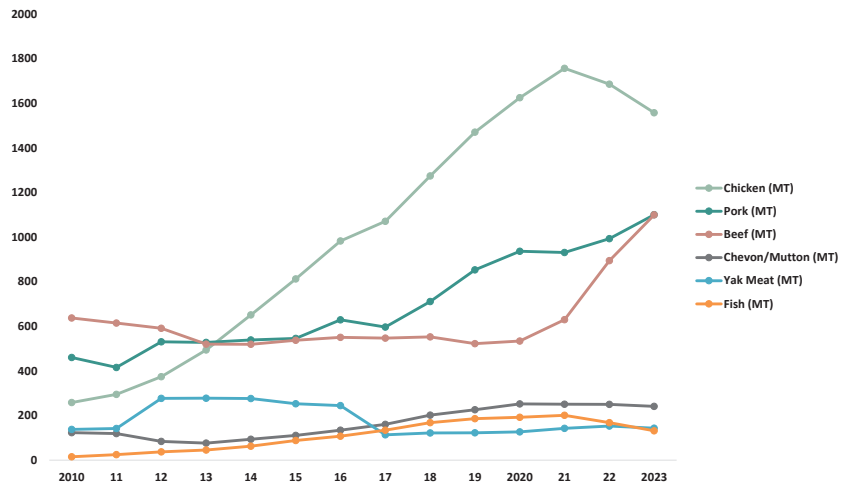
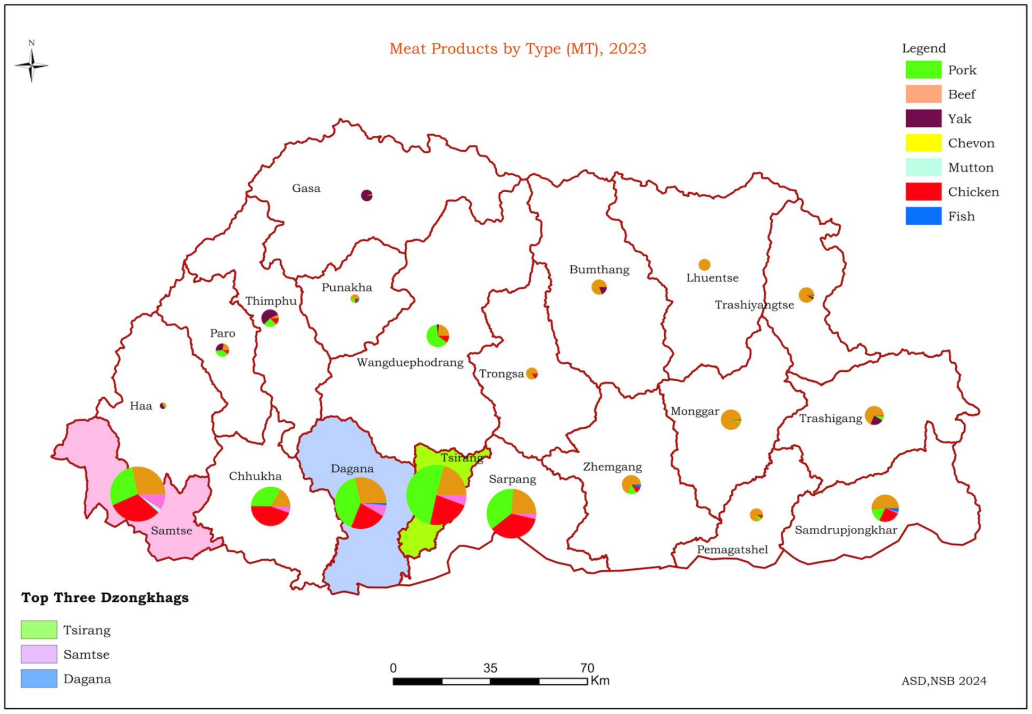


Figure 4.3: 5-year moving average meat production, 2006 to 2023

Map 4.2 shows Bhutan's meat production at a glance in 2023, by type. It is evident that Samtse and Sarpang are dominant chicken producing dzongkhags, while Tsirang and Dagana are dominant pork producing dzongkhags. Dzongkhags in the east were engaged in producing beef compared to other types of meat.

In 2023, except for beef and yak meat, the meat production increased in all categories compared to 2022. The total beef production (1,475 MT) in 2023 was 19 percent less than in 2022. Similarly, the total yak meat production (142 MT) dropped by 24 percent in 2023 (Table 4.2).



Map 4.2: Meat production by Dzongkhag

Table 4.2: Meat Production by Dzongkhag and Government Farms

(MT)

Dzongkhag	Pork	Beef	Yak	Chevon	Mutton	Chicken	Fish
Bumthang	-	50.69	11.91	0.02	0.03	0.05	-
Chhukha	137.49	68.15	-	22.66	1.18	184.39	0.58
Dagana	289.66	203.67	-	50.60	0.32	162.07	9.26
Gasa	-	1.76	34.13	-	-	-	-
Haa	1.23	3.25	6.27	-	-	0.27	-
Lhuentse	-	37.47	-	-	-	0.25	-
Monggar	4.03	105.37	-	0.02	-	1.83	0.07
Paro	18.64	10.62	13.94	-	-	4.78	-
Pema Gatshel	5.58	35.86	-	-	-	4.05	0.04
Punakha	4.75	10.88	-	0.10	-	2.57	2.25
Samdrup Jongkhar	32.76	102.52	0.22	3.60	0.19	51.13	8.91
Samtse	229.21	229.28	-	74.92	18.13	257.78	1.48
Sarpang	240.16	156.11	-	23.30	1.56	234.11	5.42
Thimphu	20.56	5.58	45.51	0.05	-	10.23	-
Trashigang	7.25	65.06	21.33	-	0.59	1.33	-
Trashi Yangtse	1.98	57.65	3.00	-	-	1.16	-
Trongsa	-	31.67	1.45	0.01	0.12	4.36	-
Tsirang	488.55	200.37	-	54.70	0.17	218.70	3.73
Wangdue Phodrang	87.19	32.13	3.89	0.41	0.22	13.83	0.21
Zhemgang	15.02	66.18	-	0.31	-	9.60	5.84
Govt. Farms	6.41	0.59	-	-	-	2.66	5.47
Total	**1,590.47**	**1,474.82**	**141.63**	**230.69**	**22.50**	**1,165.12**	**43.26**

4.3.1 Beef and Pork production

Figure 4.4 shows beef and pork production in 2023, by dzongkhag. Across dzongkhags, Samtse, Dagana and Trashigang accounted for the highest production of beef, at 15.5 percent, 13.8 percent and 13.6 percent of the national total, respectively. For pork production, Tsirang, Dagana and Sarpang accounted for the highest shares at 30.7 percent, 18.2 percent and 15.1 percent of the national total, respectively.

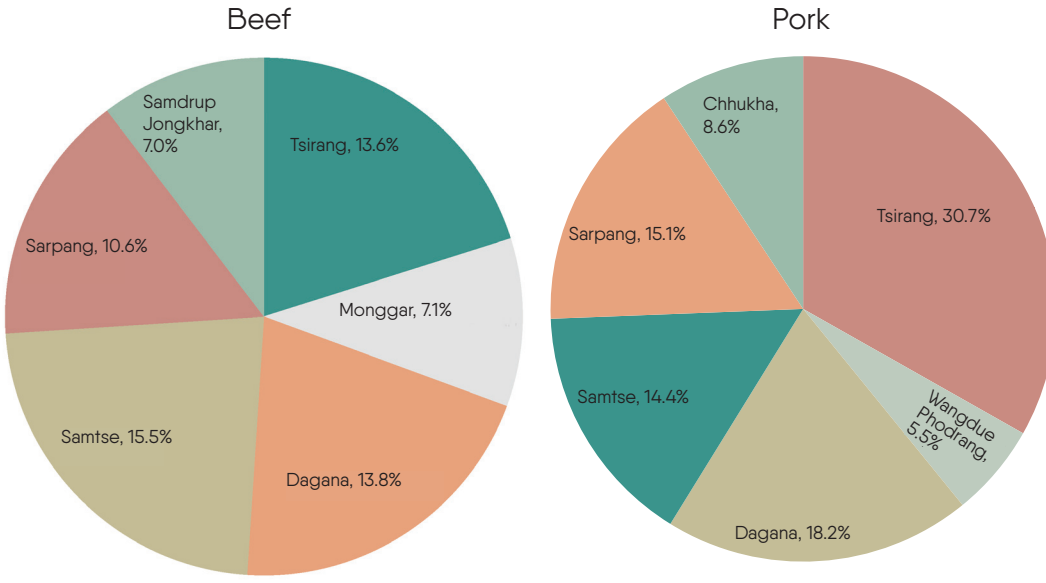


Figure 4.4: Share of beef and pork production by major producing Dzongkhags

4.3.2 Chicken and Fish production

Chicken production saw an increase of 17 percent from about 994 MT in 2022 to 1,165 MT in 2023. The total fish production in 2023 was 41 MT, an increase of 13 percent from 2022. Figure 4.5 shows the share of chicken and fish production by dzongkhag, with Samtse (22.1 percent), Sarpang (20.1 percent) and Tsirang (18.8 percent) accounted for the highest chicken production in the country. Dagana, Samdrup Jongkhar and Zhemgang dzongkhags collectively produced more than 50 percent of total fish production in the country.

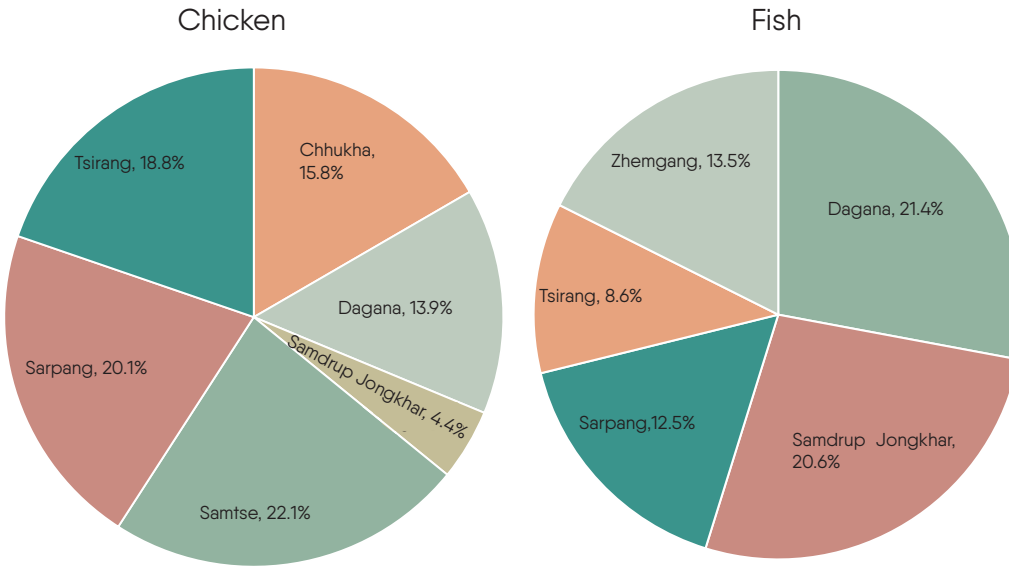


Figure 4.5: Share of chicken and fish production by major producing Dzongkhags

4.3.3 Aquaculture

According to FAO, aquaculture is considered as the farming of aquatic organisms, including fish, molluscs, crustaceans and aquatic plants. The IALC 2023, to bring clarity and common understanding, defined aquaculture as the rearing of fish in enclosed structures, such as ponds. To avoid confusion, capture fisheries from rivers was excluded. If a holder, with or without appropriate licenses, reared fish in a pond and if there was any harvest of fisheries from the ponds, these activities were considered as aquaculture.

A total of 513 holders reported practicing aquaculture in 2023. The majority of fish farmers resided in Tsirang (27.5 percent), Dagana (21.8 percent), Samtse (21.1 percent) and SamdrupJongkhar (11.5 percent) dzongkhags.

4.4 Other livestock production

Other livestock production (Table 4.3) such as eggs, honey and wool, were also collected in the census. Egg production covers all eggs produced during the reference period, regardless of poultry species. The egg production was estimated by multiplying the number of layer birds with the average laying days per bird. Data were also collected about local poultry (male and female), improved poultry-layer and broilers.

The honey production was as reported by the holders as these are not so significant in numbers. The wool production was estimated for sheep and yak by multiplying the number of sheep/ yaks sheared for wool production during the reference year with the average wool produced per shearing.

Table 4.3: Other Livestock Production by Dzongkhag and Government Farms

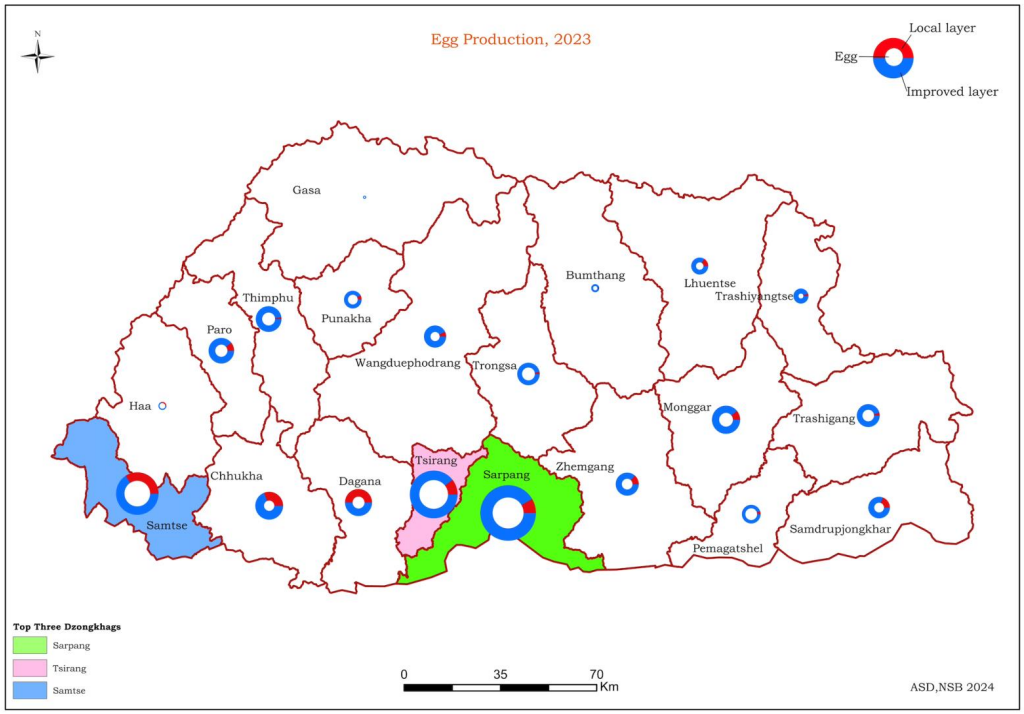
(MT unless specified)

Dzongkhag	Egg (Number)	Honey	Yak Wool	Sheep Wool
Bumthang	360,424	7.64	0.18	0.03
Chhukha	2,073,010	4.39	-	0.28
Dagana	2,781,341	4.82	-	0.06
Gasa	45,240	-	0.71	-
Haa	653,023	0.32	0.12	-
Lhuentse	1,087,208	-	0.06	0.01
Monggar	3,710,167	0.01	-	0.00
Paro	2,884,447	0.01	0.04	-
Pema Gatshel	2,720,118	0.12	-	-
Punakha	1,847,396	0.01	-	-
Samdrup Jongkhar	1,857,269	0.86	0.00	0.00
Samtse	12,911,489	11.17	-	3.80
Sarpang	18,811,554	6.62	-	0.15
Thimphu	3,255,733	0.00	0.76	-
Trashigang	2,619,298	0.01	0.83	0.58
Trashi Yangtse	471,905	-	0.03	-
Trongsa	3,237,671	0.00	0.03	0.03
Tsirang	16,163,799	5.61	-	0.04
Wangdue Phodrang	1,637,827	0.09	0.26	0.49
Zhemgang	2,237,784	0.07	-	-
Govt. Farms	4,332,835	-	0.01	0.21
Total	**85,699,538**	**41.75**	**3.03**	**5.69**

4.4.1 Egg production

The total egg production in 2023 was recorded at around 86 million eggs, a decrease of 15 percent compared to 2022.

Across Dzongkhags, Sarpang accounted for the highest egg production with 22.0 percent of the total, followed by Tsirang with 18.9 percent and Samtse with 15.1 percent. Improved layers dominate local layers (Map 4.3) in all the dzongkhags.



Map 4.3: Egg Production by Dzongkhag

4.4.2 Apiculture

The census also collected information on the number of holders engaged in beekeeping, beehive type and the quantity of honey produced. Table 4.4 shows the number of holders engaged in beekeeping, by dzongkhag and types of beehives. It was observed that there were 7,508 bee holders in the country in 2023, and they were highly concentrated in Samtse (35.0 percent), Sarpang (18.0 percent) and Dagana (15.0 percent). A total of 18,523 beehives were recorded in 2023, about 92 percent of which were local and the rest were improved beehives.

About 41.8 MT of honey was produced in 2023, an increase of 12 percent from the previous year. Samtse (36.8 percent), Bumthang (18.3 percent) and Sarpang (15.9 percent) were recorded as the highest honey producing dzongkhags in the country.

Table 4.4: Number of holders and Beehive types by Dzongkhag

(Number)

Dzongkhag	Number of Holders	Beehives Type		
		Local	Improved	Total
Bumthang	32	5	620	625
Chhukha	719	1,769	84	1,853
Dagana	1,125	2,638	120	2,758
Gasa	-	-	-	-
Haa	66	105	2	107
Lhuentse	-	-	-	-
Monggar	3	3	-	3
Paro	28	43	-	43
Pema Gatshel	26	46	26	72
Punakha	1	-	1	1
Samdrup Jongkhar	329	636	20	656
Samtse	2,627	4,970	111	5,081
Sarpang	1,355	4,143	112	4,255
Thimphu	14	17	30	47
Trashigang	6	2	18	20
Trashi Yangtse	-	-	-	-
Trongsa	4	9	1	10
Tsirang	1,111	2,553	344	2,897
Wangdue Phodrang	11	9	18	27
Zhemgang	51	68	-	68
Total	**7,508**	**17,016**	**1,507**	**18,523**

4.4.3 Wool production

Bhutan produced about 8.7 MT of wool in 2023, a sharp decrease of 12.5 MT from the previous year. About 65 percent of the total wool produced was from sheep and the remaining 35 percent were from Yak.

In terms of production share, Samtse (43.6 percent), Trashigang (16.2 percent) and Thimphu (8.8 percent) accounted for the highest in the country, driven by their high number and share of the sheep population in Samtse and yak population in Trashigang and Thimphu (Figure 4.8).

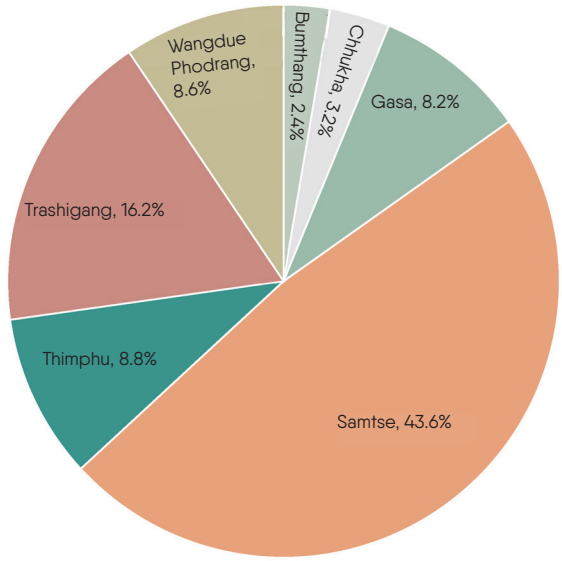


Figure 4.6: Share of wool production by major producing Dzongkhag

ANNEX TABLES

Table A2.1: Sunflower production by Dzongkhag

Dzongkhag	Number of Growers	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	9	4.80	4.80	2.87
Chhukha	1	0.10	-	-
Dagana	2	0.16	0.14	0.05
Gasa	-	-	-	-
Haa	-	-	-	-
Lhuentse	2	0.03	0.02	0.01
Monggar	1	0.34	0.34	0.05
Paro	1	0.01	0.01	0.00
Pema Gatshel	1	0.01	0.01	0.01
Punakha	-	-	-	-
Samdrup Jongkhar	4	0.34	0.27	0.06
Samtse	5	0.09	0.08	0.02
Sarpang	3	0.60	0.59	0.10
Thimphu	1	0.02	0.02	0.01
Trashigang	4	0.28	0.21	0.07
Trashi Yangtse	1	0.02	0.02	0.00
Trongsa	-	-	-	-
Tsirang	2	0.51	0.51	0.05
Wangdue Phodrang	-	-	-	-
Zhemgang	4	0.11	0.07	0.02
Total	**41**	**7.40**	**7.07**	**3.32**

Table A2.2: Soya bean production by Dzongkhag

Dzongkhag	Number of Growers	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	1	0.30	0.30	0.05
Chhukha	50	2.18	2.05	0.78
Dagana	109	11.07	10.20	2.26
Gasa	-	-	-	-
Haa	16	1.28	1.28	0.54
Lhuentse	61	14.23	10.55	1.23
Monggar	120	9.70	7.84	2.40
Paro	-	-	-	-
Pema Gatshel	1,070	75.11	67.71	20.38
Punakha	2	0.15	0.05	0.01
Samdrup Jongkhar	298	41.74	38.14	14.01
Samtse	341	13.78	12.36	3.63
Sarpang	19	0.76	0.73	0.31
Thimphu	-	-	-	-
Trashigang	97	17.11	16.33	5.17
Trashi Yangtse	92	21.55	15.95	4.15
Trongsa	-	-	-	-
Tsirang	188	30.94	24.13	5.50
Wangdue Phodrang	1	0.50	0.50	0.15
Zhemgang	208	18.49	16.56	5.38
Total	**2,673**	**258.88**	**224.66**	**65.93**

Table A2.3: Groundnut production by Dzongkhag

Dzongkhag	Number of Growers	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	-	-	-	-
Chhukha	2	0.10	0.10	0.05
Dagana	22	1.13	0.80	0.40
Gasa	-	-	-	-
Haa	1	0.01	-	-
Lhuentse	44	2.55	2.42	1.29
Monggar	89	7.57	6.26	2.56
Paro	-	-	-	-
Pema Gatshel	428	25.20	20.53	9.10
Punakha	33	6.64	6.29	5.35
Samdrup Jongkhar	27	3.62	2.59	1.41
Samtse	5	0.08	0.06	0.03
Sarpang	-	-	-	-
Thimphu	-	-	-	-
Trashigang	649	71.19	64.52	43.32
Trashi Yangtse	504	80.76	75.13	50.04
Trongsa	-	-	-	-
Tsirang	79	9.05	7.84	3.17
Wangdue Phodrang	-	-	-	-
Zhemgang	44	11.85	10.16	4.01
Total	**1,927**	**219.72**	**196.69**	**120.70**

Table A2.4: Perilla production by Dzongkhag

Dzongkhag	Number of Growers	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	1	0.01	0.01	0.00
Chhukha	16	2.96	1.27	0.17
Dagana	18	0.35	0.22	0.05
Gasa	8	0.42	0.42	0.10
Haa	1	0.10	0.10	0.01
Lhuentse	81	10.93	9.69	2.85
Monggar	6	0.16	0.16	0.03
Paro	-	-	-	-
Pema Gatshel	302	13.82	12.71	3.10
Punakha	3	0.57	0.57	0.08
Samdrup Jongkhar	139	8.60	7.88	2.16
Samtse	16	0.30	0.30	0.05
Sarpang	2	0.08	0.06	0.02
Thimphu	-	-	-	-
Trashigang	-	-	-	-
Trashi Yangtse	2	0.02	0.02	0.00
Trongsa	5	0.32	0.30	0.11
Tsirang	23	0.95	0.94	0.26
Wangdue Phodrang	10	1.66	1.66	0.40
Zhemgang	97	13.03	12.34	2.57
Total	**730**	**54.26**	**48.65**	**11.96**

Table A2.5: Adzuki Beans production by Dzongkhag

Dzongkhag	Number of Growers	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	-	-	-	-
Chhukha	41	5.07	3.19	0.89
Dagana	42	8.98	7.70	2.63
Gasa	-	-	-	-
Haa	-	-	-	-
Lhuentse	14	0.83	0.31	0.13
Monggar	196	20.64	15.73	5.08
Paro	4	0.18	0.18	0.04
Pema Gatshel	248	6.74	5.16	2.17
Punakha	-	-	-	-
Samdrup Jongkhar	27	1.05	0.90	0.36
Samtse	8	0.40	0.38	0.17
Sarpang	31	2.58	2.26	1.11
Thimphu	1	0.01	-	-
Trashigang	-	-	-	-
Trashi Yangtse	7	0.99	0.63	0.12
Trongsa	-	-	-	-
Tsirang	138	26.75	25.12	8.36
Wangdue Phodrang	18	2.72	2.22	0.80
Zhemgang	58	4.83	4.68	2.72
Total	**833**	**81.76**	**68.44**	**24.59**

Table A2.6: Lentil production by Dzongkhag

Dzongkhag	Number of Growers	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	-	-	-	-
Chhukha	3	0.40	0.40	0.12
Dagana	8	2.90	2.50	0.42
Gasa	-	-	-	-
Haa	-	-	-	-
Lhuentse	-	-	-	-
Monggar	1	0.10	0.10	0.02
Paro	-	-	-	-
Pema Gatshel	18	6.42	3.77	0.69
Punakha	-	-	-	-
Samdrup Jongkhar	50	3.43	2.94	0.67
Samtse	35	2.70	2.68	0.72
Sarpang	7	0.77	0.67	0.05
Thimphu	-	-	-	-
Trashigang	-	-	-	-
Trashi Yangtse	-	-	-	-
Trongsa	-	-	-	-
Tsirang	22	4.30	3.84	1.33
Wangdue Phodrang	-	-	-	-
Zhemgang	5	0.22	0.22	0.04
Total	**149**	**21.22**	**17.11**	**4.06**

Table A2.7: Garlic leaves production by Dzongkhag

Dzongkhag	Number of Growers	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	110	0.93	0.90	0.69
Chhukha	107	3.22	3.17	2.96
Dagana	569	5.28	5.16	4.30
Gasa	20	0.31	0.31	0.21
Haa	16	0.25	0.24	0.14
Lhuentse	406	6.43	6.11	5.54
Monggar	1,212	22.89	22.35	17.93
Paro	7	0.30	0.30	0.21
Pema Gatshel	739	10.00	9.36	7.78
Punakha	172	3.65	3.36	3.77
Samdrup Jongkhar	614	12.08	11.92	14.03
Samtse	167	1.93	1.92	1.22
Sarpang	159	1.26	1.25	0.86
Thimphu	208	2.26	2.26	2.43
Trashigang	1,825	26.15	25.67	22.47
Trashi Yangtse	898	14.28	13.85	14.06
Trongsa	231	3.15	3.15	3.35
Tsirang	365	7.22	7.22	6.46
Wangdue Phodrang	54	1.16	1.15	1.35
Zhemgang	133	2.23	1.64	1.11
Total	**8,012**	**124.98**	**121.29**	**110.85**

Table A2.8: Green leaves production by Dzongkhag

Dzongkhag	Number of Growers	Production (MT)
Bumthang	841	22.15
Chhukha	2,776	179.04
Dagana	3,274	129.53
Gasa	374	10.23
Haa	495	13.76
Lhuentse	1,448	39.64
Monggar	3,521	130.05
Paro	904	58.88
Pema Gatshel	2,250	45.26
Punakha	982	57.30
Samdrup Jongkhar	2,793	182.64
Samtse	7,328	227.03
Sarpang	3,424	99.68
Thimphu	1,228	104.46
Trashigang	4,374	117.79
Trashi Yangtse	1,650	72.02
Trongsa	880	39.87
Tsirang	3,117	259.93
Wangdue Phodrang	1,226	174.08
Zhemgang	1,542	78.15
Total	**44,427**	**2,041.47**

Table A2.9: Bunching onion production by Dzongkhag

Dzongkhag	Number of Growers	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	147	1.17	1.17	1.70
Chhukha	240	5.06	4.97	3.64
Dagana	1,100	11.12	10.99	9.67
Gasa	61	0.70	0.66	0.63
Haa	59	0.57	0.57	0.61
Lhuentse	897	11.36	11.08	9.65
Monggar	1,509	34.93	34.41	28.26
Paro	103	2.89	2.88	2.90
Pema Gatshel	171	2.64	2.55	2.30
Punakha	910	20.95	20.61	20.72
Samdrup Jongkhar	560	10.57	10.49	12.91
Samtse	335	4.34	4.23	3.09
Sarpang	368	3.73	3.64	3.03
Thimphu	653	9.12	9.04	9.46
Trashigang	1,681	28.27	28.14	23.32
Trashi Yangtse	617	14.34	14.00	10.98
Trongsa	473	5.78	5.73	6.29
Tsirang	641	16.14	16.14	13.48
Wangdue Phodrang	436	13.29	13.24	12.37
Zhemgang	78	0.82	0.82	0.73
Total	**11,039**	**197.77**	**195.35**	**175.75**

Table A2.10: Eggplant production by Dzongkhag

Dzongkhag	Number of Growers	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	12	0.14	0.14	0.29
Chhukha	451	13.78	13.61	14.86
Dagana	660	7.58	7.34	8.65
Gasa	11	0.18	0.14	0.17
Haa	32	0.41	0.40	0.52
Lhuentse	747	10.39	9.68	11.09
Monggar	444	12.30	11.94	12.91
Paro	252	4.46	4.42	6.06
Pema Gatshel	582	5.90	5.71	6.09
Punakha	149	7.47	7.33	15.94
Samdrup Jongkhar	781	11.69	11.21	12.14
Samtse	589	11.80	11.54	8.92
Sarpang	517	4.64	4.50	5.62
Thimphu	324	3.95	3.93	5.49
Trashigang	628	10.74	10.55	13.13
Trashi Yangtse	498	11.62	11.20	11.02
Trongsa	199	2.07	2.02	2.85
Tsirang	420	12.07	11.80	11.39
Wangdue Phodrang	172	6.08	5.28	5.82
Zhemgang	543	8.37	8.10	10.56
Total	**8,011**	**145.62**	**140.85**	**163.53**

Table A2.11: Pumpkin, squash & gourds production by Dzongkhag

Dzongkhag	Number of Growers	Production (MT)
Bumthang	1,090	25.24
Chhukha	4,158	537.87
Dagana	5,347	520.80
Gasa	90	3.92
Haa	844	42.18
Lhuentse	2,111	86.86
Monggar	4,486	314.20
Paro	1,204	55.49
Pema Gatshel	3,725	330.86
Punakha	1,175	122.40
Samdrup Jongkhar	3,656	439.25
Samtse	10,053	698.34
Sarpang	3,796	184.63
Thimphu	1,742	59.60
Trashigang	3,812	256.68
Trashi Yangtse	2,324	103.39
Trongsa	1,441	86.85
Tsirang	5,364	812.79
Wangdue Phodrang	462	30.96
Zhemgang	2,068	218.59
Total	**58,948**	**4,930.89**

Table A2.12: Cucumber production by Dzongkhag

Dzongkhag	Number of Growers	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	141	1.13	1.13	4.15
Chhukha	1,153	20.09	19.70	48.19
Dagana	2,056	15.97	15.60	65.49
Gasa	31	0.39	0.39	2.24
Haa	59	0.75	0.69	2.09
Lhuentse	1,007	16.44	15.22	38.65
Monggar	1,977	66.42	61.25	126.79
Paro	224	8.85	8.27	17.76
Pema Gatshel	1,573	16.67	15.58	63.69
Punakha	707	41.48	40.25	142.68
Samdrup Jongkhar	1,127	35.39	34.27	97.44
Samtse	2,340	34.21	33.47	61.98
Sarpang	1,143	12.60	12.49	29.52
Thimphu	384	2.73	2.72	8.85
Trashigang	2,287	20.15	18.97	83.26
Trashi Yangtse	963	15.54	15.48	50.86
Trongsa	545	8.02	8.00	15.53
Tsirang	1,832	35.85	34.05	107.82
Wangdue Phodrang	319	3.58	3.20	14.61
Zhemgang	895	15.70	14.71	55.14
Total	**20,763**	**371.94**	**355.44**	**1,036.70**

Table A2.13: Turnip production by Dzongkhag

Dzongkhag	Number of Growers	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	720	104.01	102.90	358.81
Chhukha	334	41.61	41.42	254.70
Dagana	176	2.60	2.35	3.74
Gasa	302	10.49	10.16	12.75
Haa	582	172.49	147.32	379.97
Lhuentse	93	2.79	2.53	3.63
Monggar	244	9.63	8.66	15.72
Paro	339	69.22	67.35	170.11
Pema Gatshel	180	2.47	2.35	3.91
Punakha	206	6.98	6.98	16.53
Samdrup Jongkhar	224	2.16	1.99	3.31
Samtse	42	0.65	0.64	0.61
Sarpang	25	0.17	0.17	0.18
Thimphu	659	80.45	77.14	421.48
Trashigang	190	4.17	4.11	7.04
Trashi Yangtse	86	3.05	3.03	9.07
Trongsa	266	21.46	21.14	52.97
Tsirang	74	5.74	5.69	7.54
Wangdue Phodrang	777	600.93	596.56	1,356.26
Zhemgang	58	2.63	2.53	4.60
Total	**5,577**	**1,143.68**	**1,105.00**	**3,082.90**

Table A2.14: Pea's production by Dzongkhag

Dzongkhag	Number of Growers	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	375	3.28	3.24	3.72
Chhukha	277	26.83	26.42	28.76
Dagana	461	8.41	8.09	7.48
Gasa	21	0.37	0.35	0.48
Haa	94	9.84	7.77	6.11
Lhuentse	398	5.43	5.30	6.11
Monggar	828	66.32	60.94	49.25
Paro	300	53.32	51.53	59.94
Pema Gatshel	727	15.39	13.12	12.97
Punakha	170	21.10	17.33	16.58
Samdrup Jongkhar	804	27.74	25.56	29.25
Samtse	421	8.60	8.13	5.62
Sarpang	447	5.48	5.37	4.34
Thimphu	423	10.32	8.45	9.74
Trashigang	1,040	27.80	26.16	27.75
Trashi Yangtse	503	7.58	7.15	6.92
Trongsa	136	2.19	2.15	3.05
Tsirang	737	55.16	52.01	46.87
Wangdue Phodrang	142	3.36	3.34	3.49
Zhemgang	152	3.35	3.19	4.28
Total	**8,456**	**361.85**	**335.61**	**332.72**

Table A2.15: Beetroot production by Dzongkhag

Dzongkhag	Number of Growers	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	4	0.02	0.02	0.02
Chhukha	67	17.16	17.16	53.03
Dagana	7	0.04	0.04	0.06
Gasa	-	-	-	-
Haa	1	0.01	0.01	0.01
Lhuentse	16	0.50	0.50	0.85
Monggar	10	0.37	0.37	0.39
Paro	69	14.50	14.50	32.88
Pema Gatshel	16	0.13	0.13	0.13
Punakha	-	-	-	-
Samdrup Jongkhar	1	0.02	0.02	0.07
Samtse	30	0.61	0.61	0.68
Sarpang	13	0.07	0.07	0.07
Thimphu	32	0.41	0.37	0.39
Trashigang	-	-	-	-
Trashi Yangtse	1	0.10	0.10	0.10
Trongsa	2	0.02	0.02	0.03
Tsirang	5	0.20	0.20	0.20
Wangdue Phodrang	1	0.02	0.02	0.04
Zhemgang	6	0.09	0.08	0.08
Total	**281**	**34.26**	**34.20**	**89.02**

Table A2.16: Turmeric production by Dzongkhag

Dzongkhag	Number of Growers	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	1	0.01	0.01	0.01
Chhukha	89	3.80	3.77	5.43
Dagana	214	11.69	11.38	9.88
Gasa	-	-	-	-
Haa	2	0.03	0.03	0.02
Lhuentse	25	0.25	0.25	0.19
Monggar	153	10.46	10.41	13.74
Paro	-	-	-	-
Pema Gatshel	266	12.53	12.53	14.52
Punakha	3	0.05	0.05	0.03
Samdrup Jongkhar	335	28.36	28.09	25.20
Samtse	953	21.10	20.73	15.67
Sarpang	254	9.16	9.01	9.56
Thimphu	-	-	-	-
Trashigang	30	0.52	0.52	0.48
Trashi Yangtse	37	1.02	0.94	0.45
Trongsa	12	2.19	2.19	1.37
Tsirang	238	8.85	8.85	6.82
Wangdue Phodrang	1	0.34	0.34	0.25
Zhemgang	247	32.77	31.07	31.09
Total	**2,860**	**143.10**	**140.13**	**134.70**

Table A2.17: Garlic production by Dzongkhag

Dzongkhag	Number of Growers	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	786	11.97	11.87	15.10
Chhukha	199	3.94	3.82	2.69
Dagana	764	9.35	9.20	9.27
Gasa	160	7.10	6.82	6.65
Haa	172	6.13	5.95	4.96
Lhuentse	972	19.45	18.97	23.64
Monggar	1,761	47.35	45.93	29.14
Paro	53	1.82	1.77	1.25
Pema Gatshel	1,143	19.95	19.51	16.05
Punakha	124	4.37	4.32	5.42
Samdrup Jongkhar	904	22.79	22.49	17.74
Samtse	859	11.48	11.12	7.52
Sarpang	558	6.07	6.03	5.08
Thimphu	495	11.31	11.22	13.52
Trashigang	3,241	124.35	122.54	143.17
Trashi Yangtse	915	21.13	20.21	22.65
Trongsa	236	3.39	3.27	3.88
Tsirang	558	8.77	8.77	7.31
Wangdue Phodrang	257	21.31	21.20	25.12
Zhemgang	357	7.15	7.02	6.01
Total	**14,514**	**369.19**	**362.03**	**366.16**

Table A2.18: Coriander production by Dzongkhag

Dzongkhag	Number of Growers	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	26	0.12	0.12	0.10
Chhukha	378	5.56	5.39	3.60
Dagana	478	3.20	3.11	2.62
Gasa	90	1.12	1.01	0.59
Haa	38	0.45	0.45	0.33
Lhuentse	632	6.24	6.08	6.04
Monggar	1,114	17.88	17.28	9.01
Paro	83	1.00	0.95	0.27
Pema Gatshel	950	9.22	8.76	4.72
Punakha	366	7.52	7.44	8.04
Samdrup Jongkhar	710	10.19	9.97	9.47
Samtse	708	6.73	6.69	3.28
Sarpang	500	3.66	3.62	2.55
Thimphu	810	16.01	15.80	18.70
Trashigang	1,480	17.05	16.76	13.65
Trashi Yangtse	973	14.06	13.80	4.86
Trongsa	515	6.30	6.29	6.64
Tsirang	420	6.55	6.51	7.55
Wangdue Phodrang	82	2.47	2.42	3.78
Zhemgang	361	3.55	3.51	2.28
Total	**10,714**	**138.87**	**135.94**	**108.07**

Table A2.19: Sweet potato production by Dzongkhag

Dzongkhag	Number of Growers	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	-	-	-	-
Chhukha	81	4.24	3.62	3.02
Dagana	134	3.90	3.53	2.74
Gasa	-	-	-	-
Haa	-	-	-	-
Lhuentse	22	0.69	0.48	0.61
Monggar	169	7.02	6.29	4.87
Paro	-	-	-	-
Pema Gatshel	225	4.69	4.30	4.09
Punakha	6	0.12	0.12	0.12
Samdrup Jongkhar	160	5.41	4.51	3.47
Samtse	102	2.11	1.84	1.47
Sarpang	64	1.06	0.94	0.66
Thimphu	-	-	-	-
Trashigang	51	3.48	3.24	3.51
Trashi Yangtse	15	0.37	0.33	0.24
Trongsa	7	0.22	0.21	0.22
Tsirang	120	8.51	8.43	5.79
Wangdue Phodrang	10	0.17	0.17	0.14
Zhemgang	122	4.46	3.55	2.47
Total	**1,288**	**46.44**	**41.55**	**33.42**

Table A2.20: Taro/Yautia/Collocasia production by Dzongkhag

Dzongkhag	Number of Growers	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	-	-	-	-
Chhukha	242	7.461	5.873	6.937
Dagana	356	6.549	5.918	10.454
Gasa	-	-	-	-
Haa	11	0.25	0.25	0.312
Lhuentse	1	0.005	0.005	0.01
Monggar	227	15.64	15.238	43.599
Paro	-	-	-	-
Pema Gatshel	489	8.6805	7.6065	14.703
Punakha	-	-	-	-
Samdrup Jongkhar	314	5.3	4.271	5.164
Samtse	798	14.895	13.368	15.772
Sarpang	339	5.785	5.1245	7.242
Thimphu	-	-	-	-
Trashigang	15	0.2	0.18	0.262
Trashi Yangtse	16	0.375	0.225	0.287
Trongsa	-	-	-	-
Tsirang	305	10.9295	10.482	9.599
Wangdue Phodrang	-	-	-	-
Zhemgang	253	12.829	11.524	15.006
Total	**3,366**	**88.899**	**80.065**	**129.347**

Table A2.21: Ground apple production by Dzongkhag

Dzongkhag	Number of Growers	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Bumthang	105	1.15	1.05	1.81
Chhukha	45	1.49	1.49	2.38
Dagana	101	1.25	1.21	2.22
Gasa	8	0.08	0.08	0.18
Haa	8	0.13	0.13	0.22
Lhuentse	124	1.68	1.67	2.98
Monggar	214	4.07	4.01	7.17
Paro	12	0.27	0.27	0.68
Pema Gatshel	258	3.86	3.65	5.97
Punakha	23	0.41	0.41	0.70
Samdrup Jongkhar	219	4.76	4.70	10.50
Samtse	58	0.87	0.86	0.97
Sarpang	20	0.16	0.15	0.22
Thimphu	28	0.16	0.16	0.33
Trashigang	120	2.02	1.95	3.84
Trashi Yangtse	101	1.56	1.50	2.31
Trongsa	131	0.95	0.93	1.69
Tsirang	53	0.92	0.92	2.08
Wangdue Phodrang	24	0.46	0.45	0.56
Zhemgang	107	1.40	1.37	2.54
Total	**1,759**	**27.64**	**26.96**	**49.34**

Table A2.22: Pear production by Dzongkhag

Dzongkhag	Number of Growers	Total Trees	Bearing Trees	Production (MT)
Bumthang	419	1,062	313	8.01
Chhukha	835	2,948	543	17.31
Dagana	1,046	1,979	1,111	60.81
Gasa	96	834	208	4.67
Haa	39	103	73	2.03
Lhuentse	1,049	4,417	1,798	24.32
Monggar	2,034	11,194	5,788	98.03
Paro	359	1347	590	14.12
Pema Gatshel	682	3,865	1,319	20.45
Punakha	1,114	4,003	1,590	34.45
Samdrup Jongkhar	631	1,525	990	57.98
Samtse	512	760	551	18.78
Sarpang	479	988	562	19.67
Thimphu	582	1,940	730	15.86
Trashigang	2,120	8,240	4,536	76.69
Trashi Yangtse	1,045	4,137	2,388	35.44
Trongsa	326	796	381	8.55
Tsirang	1,041	2,199	1,605	129.69
Wangdue Phodrang	683	1,833	757	21.47
Zhemgang	162	579	106	1.82
Total	**15,254**	**54,749**	**259,39**	**670.15**

Table A2.23: Peach production by Dzongkhag

Dzongkhag	Number of Growers	Total Trees	Bearing Trees	Production (MT)
Bumthang	343	676	224	4.38
Chhukha	1151	3,154	1,042	16.96
Dagana	1,243	2,679	1,459	27.93
Gasa	57	235	77	1.31
Haa	162	336	205	3.04
Lhuentse	1,104	3,369	1,843	31.35
Monggar	1,706	4,825	3,202	55.70
Paro	674	2,163	1,235	26.99
Pema Gatshel	1,401	3,747	2,378	43.05
Punakha	1,271	4,909	2,095	57.04
Samdrup Jongkhar	1,098	2,292	1,515	29.67
Samtse	1,100	1,527	1,216	15.49
Sarpang	657	1,059	707	10.46
Thimphu	613	1,662	855	17.25
Trashigang	1,807	4,399	1,865	33.65
Trashi Yangtse	842	2,044	1,103	25.66
Trongsa	461	1,262	582	10.75
Tsirang	1,264	3,066	2,096	46.79
Wangdue Phodrang	990	2,194	692	15.62
Zhemgang	362	977	544	12.53
Total	**18,306**	**46,575**	**24,935**	**485.62**

Table A2.24: Plum production by Dzongkhag

Dzongkhag	Number of Growers	Total Trees	Bearing Trees	Production (MT)
Bumthang	412	826	379	7.95
Chhukha	281	484	196	4.21
Dagana	868	1,575	1,069	26.48
Gasa	44	219	18	0.67
Haa	125	172	49	1.11
Lhuentse	814	1,818	948	19.88
Monggar	969	1,940	1,457	37.31
Paro	118	216	142	2.55
Pema Gatshel	575	1,329	552	14.21
Punakha	376	936	499	17.24
Samdrup Jongkhar	431	867	630	26.27
Samtse	388	513	402	5.51
Sarpang	349	627	405	7.19
Thimphu	263	566	287	9.38
Trashigang	825	1,278	817	24.62
Trashi Yangtse	583	974	521	15.90
Trongsa	224	470	241	6.15
Tsirang	731	1,398	1,101	38.73
Wangdue Phodrang	174	286	71	3.27
Zhemgang	286	559	224	5.92
Total	**8,836**	**17,053**	**10,008**	**274.54**

Table A2.25: Apricot production by Dzongkhag

Dzongkhag	Number of Growers	Total Trees	Bearing Trees	Production (MT)
Bumthang	108	167	17	0.24
Chhukha	191	457	31	0.49
Dagana	171	698	104	1.64
Gasa	3	6	2	0.01
Haa	232	375	29	0.22
Lhuentse	110	315	188	1.61
Monggar	93	271	139	2.83
Paro	139	349	207	5.63
Pema Gatshel	52	156	65	1.24
Punakha	72	182	40	0.99
Samdrup Jongkhar	68	205	91	0.56
Samtse	30	39	32	0.37
Sarpang	8	11	7	0.05
Thimphu	270	613	191	3.49
Trashigang	246	661	93	1.48
Trashi Yangtse	31	63	5	0.10
Trongsa	53	132	53	0.65
Tsirang	23	36	20	0.24
Wangdue Phodrang	205	568	110	1.93
Zhemgang	85	204	26	0.28
Total	**2,190**	**5,508**	**1,450**	**24.04**

Table A2.26: Persimmon production by Dzongkhag

Dzongkhag	Number of Growers	Total Trees	Bearing Trees	Production (MT)
Bumthang	13	32	-	-
Chhukha	356	1,077	32	0.68
Dagana	335	1,131	72	0.80
Gasa	44	196	2	0.02
Haa	8	12	8	0.17
Lhuentse	487	1,303	340	2.82
Monggar	731	2,481	745	8.47
Paro	276	447	215	5.87
Pema Gatshel	294	820	331	3.58
Punakha	795	2,141	1,220	31.22
Samdrup Jongkhar	159	423	97	1.10
Samtse	119	136	32	1.13
Sarpang	139	224	19	0.27
Thimphu	234	386	126	2.39
Trashigang	644	1,230	354	5.99
Trashi Yangtse	216	524	194	3.20
Trongsa	131	242	102	2.87
Tsirang	225	635	122	0.92
Wangdue Phodrang	315	658	393	11.93
Zhemgang	69	150	52	0.70
Total	**5,590**	**14,248**	**4,456**	**84.13**

Table A2.27: Walnut production by Dzongkhag

Dzongkhag	Number of Growers	Total Trees	Bearing Trees	Production (MT)
Bumthang	688	2,027	709	6.77
Chhukha	533	3,137	212	3.20
Dagana	474	1,925	161	3.36
Gasa	57	213	3	0.04
Haa	103	654	123	1.58
Lhuentse	699	2,658	469	8.90
Monggar	904	2,647	859	14.36
Paro	558	1,944	799	18.48
Pema Gatshel	447	2,783	314	4.41
Punakha	694	2,736	1,144	11.06
Samdrup Jongkhar	529	2,893	227	4.30
Samtse	229	496	8	0.09
Sarpang	306	1,086	18	0.19
Thimphu	483	1,602	738	5.93
Trashigang	1,286	4,675	1,282	17.33
Trashi Yangtse	808	2,890	591	9.05
Trongsa	493	2,724	335	7.00
Tsirang	473	1,477	118	0.96
Wangdue Phodrang	652	2,052	382	5.16
Zhemgang	402	2,273	419	7.16
Total	**10,818**	**42,892**	**8,911**	**129.31**

Table A2.28: Lemons & Lime production by Dzongkhag

Dzongkhag	Number of Growers	Total Trees	Bearing Trees	Production (MT)
Bumthang	-	-	-	-
Chhukha	956	9,146	1,462	12.80
Dagana	1,367	10,222	1,931	15.56
Gasa	3	3	3	0.01
Haa	9	24	10	0.06
Lhuentse	65	137	37	0.43
Monggar	390	1,604	455	5.28
Paro	-	-	-	-
Pema Gatshel	1,329	12,663	1,215	12.78
Punakha	370	1,365	498	3.49
Samdrup Jongkhar	851	3,172	1,139	10.65
Samtse	1,938	12,281	4,559	41.93
Sarpang	1,221	6,426	2,119	17.04
Thimphu	2	2	-	-
Trashigang	145	365	110	0.98
Trashi Yangtse	65	186	23	0.21
Trongsa	103	657	36	0.40
Tsirang	1,380	9,723	1,173	7.93
Wangdue Phodrang	134	427	137	1.38
Zhemgang	443	2,142	771	8.21
Total	**10,771**	**70,545**	**15,678**	**139.13**

Table A2.29: Hazelnut production by Dzongkhag

Dzongkhag	Number of Growers	Total Trees	Bearing Trees	Production (MT)
Bumthang	82	5,677	1,609	0.22
Chhukha	118	4,980	144	0.13
Dagana	108	20,727	301	0.07
Gasa	9	2,175	1,705	1.61
Haa	31	1,699	117	0.02
Lhuentse	155	23,026	5,129	3.10
Monggar	340	69,986	12,421	3.54
Paro	89	3,648	181	0.12
Pema Gatshel	279	62,048	585	0.65
Punakha	157	11,391	675	0.15
Samdrup Jongkhar	313	106,788	1,055	0.30
Samtse	1	1	-	-
Sarpang	28	59	-	-
Thimphu	38	1,781	323	0.05
Trashigang	247	72,122	5,047	1.54
Trashi Yangtse	129	16,530	5,603	1.76
Trongsa	46	5,551	367	0.10
Tsirang	153	25,514	24	0.04
Wangdue Phodrang	116	5,965	1,051	0.66
Zhemgang	32	4,887	2	0.01
Total	**2,471**	**444,555**	**36,339**	**14.07**

Table A2.30: Mango production by Dzongkhag

Dzongkhag	Number of Growers	Total Trees	Bearing Trees	Production (MT)
Bumthang	-	-	-	-
Chhukha	935	4,170	709	12.04
Dagana	2,149	17,663	45,44	79.93
Gasa	-	-	-	-
Haa	3	4	4	0.00
Lhuentse	125	1,307	728	10.61
Monggar	1,202	11,209	4,154	83.47
Paro	3	5	-	-
Pema Gatshel	2,109	23,976	8,690	84.36
Punakha	601	2,099	688	15.99
Samdrup Jongkhar	2,190	13,347	3,665	37.99
Samtse	2,832	8,408	2,223	33.08
Sarpang	2,334	10,062	3,688	50.46
Thimphu	1	1	-	-
Trashigang	1,106	6,179	2,035	29.74
Trashi Yangtse	433	2,173	924	16.11
Trongsa	323	1,763	252	3.06
Tsirang	1,720	11,940	2,979	50.13
Wangdue Phodrang	194	759	223	5.21
Zhemgang	947	7,272	2,142	30.48
Total	**19,207**	**122,337**	**37,648**	**542.67**

Table A2.31: Guava production by Dzongkhag

Dzongkhag	Number of Growers	Total Trees	Bearing Trees	Production (MT)
Bumthang	-	-	-	-
Chhukha	893	2,198	1,517	18.03
Dagana	2,009	6,898	5,375	74.45
Gasa	-	-	-	-
Haa	70	199	116	0.88
Lhuentse	258	765	634	8.74
Monggar	912	3,358	2,753	39.23
Paro	2	2	1	0.00
Pema Gatshel	1,488	7,038	5,146	61.09
Punakha	641	4,915	3,740	49.92
Samdrup Jongkhar	1,607	4,314	3,255	40.73
Samtse	3,251	6,504	5,093	56.44
Sarpang	2,037	6,119	4,588	44.91
Thimphu	-	-	-	-
Trashigang	512	1,259	1,025	14.29
Trashi Yangtse	203	434	360	6.07
Trongsa	356	3,214	2,772	18.34
Tsirang	1,936	8,104	6,295	101.52
Wangdue Phodrang	291	994	757	13.37
Zhemgang	705	2,766	2,137	35.20
Total	**17,171**	**59,081**	**45,564**	**583.20**

Table A2.32: Pomegranate production by Dzongkhag

Dzongkhag	Number of Growers	Total Trees	Bearing Trees	Production (MT)
Bumthang	-	-	-	-
Chhukha	72	142	41	0.17
Dagana	933	2,453	1,210	10.54
Gasa	-	-	-	-
Haa	-	-	-	-
Lhuentse	95	285	239	5.26
Monggar	297	936	536	5.00
Paro	56	84	47	0.70
Pema Gatshel	583	1,689	581	4.38
Punakha	350	773	433	6.20
Samdrup Jongkhar	458	996	512	3.20
Samtse	221	343	137	0.67
Sarpang	163	280	70	0.30
Thimphu	7	10	8	0.09
Trashigang	286	620	272	3.14
Trashi Yangtse	190	296	198	2.05
Trongsa	95	211	122	0.64
Tsirang	850	3,654	1,148	10.55
Wangdue Phodrang	132	312	149	1.89
Zhemgang	73	174	64	0.46
Total	**4,861**	**13,258**	**5,767**	**55.23**

Table A2.33: Avocado production by Dzongkhag

Dzongkhag	Number of Growers	Total Trees	Bearing Trees	Production (MT)
Bumthang	1	2	-	-
Chhukha	682	4,256	277	2.63
Dagana	2,452	19,702	1,432	13.71
Gasa	5	13	-	-
Haa	18	67	7	0.03
Lhuentse	511	2,175	334	6.20
Monggar	2,460	24,015	4,104	43.28
Paro	9	11	1	0.02
Pema Gatshel	2,318	24,398	2,403	25.61
Punakha	1,093	5,723	636	9.07
Samdrup Jongkhar	1,945	13,703	1,370	14.17
Samtse	1,938	6,230	725	6.62
Sarpang	1,517	5,870	541	4.84
Thimphu	1	2	-	-
Trashigang	1,725	8,676	1,055	10.59
Trashi Yangtse	425	2,364	151	2.23
Trongsa	456	2,902	165	1.24
Tsirang	2,466	24,118	2,208	33.51
Wangdue Phodrang	438	2,962	244	2.74
Zhemgang	1,137	13,629	1,311	15.58
Total	**21,597**	**160,818**	**16,964**	**192.06**

Table A2.34: Litchi production by Dzongkhag

Dzongkhag	Number of Growers	Total Trees	Bearing Trees	Production (MT)
Bumthang	-	-	-	-
Chhukha	631	3,230	872	13.51
Dagana	1,126	6,678	2,366	29.55
Gasa	-	-	-	-
Haa	1	1	1	0.00
Lhuentse	13	26	1	0.01
Monggar	243	1043	349	2.68
Paro	-	-	-	-
Pema Gatshel	1,473	10,202	3,314	38.62
Punakha	21	43	4	0.02
Samdrup Jongkhar	1,560	6,345	2,088	24.94
Samtse	2,638	6,985	3,383	51.43
Sarpang	2,258	13,315	10,131	158.47
Thimphu	-	-	-	-
Trashigang	32	78	3	0.04
Trashi Yangtse	47	82	7	0.02
Trongsa	68	197	50	1.23
Tsirang	549	2,635	796	9.77
Wangdue Phodrang	24	51	11	0.03
Zhemgang	592	3,599	1,292	19.99
Total	**11,276**	**54,510**	**24,668**	**350.31**

Table A2.35: Jackfruit production by Dzongkhag

Dzongkhag	Number of Growers	Total Trees	Bearing Trees	Production (MT)
Bumthang	-	-	-	-
Chhukha	280	534	229	17.47
Dagana	607	1,474	620	43.58
Gasa	-	-	-	-
Haa	-	-	-	-
Lhuentse	2	3	2	0.26
Monggar	145	239	116	17.65
Paro	-	-	-	-
Pema Gatshel	854	2,582	877	56.09
Punakha	42	59	30	1.23
Samdrup Jongkhar	741	1,542	648	42.94
Samtse	757	1,191	805	38.08
Sarpang	623	1,143	675	48.60
Thimphu	-	-	-	-
Trashigang	13	15	10	0.63
Trashi Yangtse	15	23	17	0.31
Trongsa	52	102	41	3.43
Tsirang	255	463	157	11.37
Wangdue Phodrang	8	18	7	1.20
Zhemgang	320	600	385	53.06
Total	**4,714**	**9,988**	**4,619**	**335.90**

Table A2.36: Banana production by Dzongkhag

Dzongkhag	Number of Growers	Total Trees	Bearing Trees	Production (MT)
Bumthang	-	-	-	-
Chhukha	1,744	38,026	9,714	103.94
Dagana	2,975	76,291	30,875	350.11
Gasa	-	-	-	-
Haa	189	1,721	1,006	5.95
Lhuentse	406	5,252	1,487	9.96
Monggar	1,700	60,169	11,534	108.36
Paro	10	31	18	0.40
Pema Gatshel	1,724	39,499	9,333	139.47
Punakha	590	3,678	1,145	10.44
Samdrup Jongkhar	2,083	37,654	8,355	111.09
Samtse	5,625	93,397	26,677	337.52
Sarpang	3,377	118,320	32,295	436.06
Thimphu	1	2	-	-
Trashigang	1,061	20,781	3,879	35.41
Trashi Yangtse	471	9,792	2,135	26.80
Trongsa	315	4,102	2,364	15.15
Tsirang	2,453	137,573	39,596	528.53
Wangdue Phodrang	245	4,412	1,430	13.67
Zhemgang	983	30,085	10,121	115.68
Total	**25,952**	**680,785**	**191,964**	**2,348.53**

Table A2.37: Tree tomato production by Dzongkhag

Dzongkhag	Number of Growers	Total Trees	Bearing Trees	Production (MT)
Bumthang	-	-	-	-
Chhukha	428	1,070	847	7.06
Dagana	1,299	3,971	3,301	19.08
Gasa	9	22	21	0.22
Haa	24	60	60	0.51
Lhuentse	989	2,596	2,340	19.74
Monggar	1,286	3,361	3,044	24.75
Paro	1	1	1	0.01
Pema Gatshel	1,105	2,181	1,899	13.00
Punakha	958	3,433	2,693	21.92
Samdrup Jongkhar	507	1,194	836	8.12
Samtse	715	1,479	1,165	6.82
Sarpang	570	3,063	2,698	12.41
Thimphu	1	1	1	0.00
Trashigang	839	1,420	1,235	10.01
Trashi Yangtse	618	960	875	8.33
Trongsa	491	1,629	1,402	9.23
Tsirang	1,509	7,179	5,958	33.53
Wangdue Phodrang	324	825	657	5.82
Zhemgang	442	1,300	1,105	8.02
Total	**12,115**	**35,745**	**30,138**	**208.55**

Table A2.38: Papaya production by Dzongkhag

Dzongkhag	Number of Growers	Total Trees	Bearing Trees	Production (MT)
Bumthang	-	-	-	-
Chhukha	93	239	92	1.57
Dagana	742	2,485	1,842	28.06
Gasa	-	-	-	-
Haa	-	-	-	-
Lhuentse	16	36	33	0.48
Monggar	268	668	545	7.30
Paro	-	-	-	-
Pema Gatshel	316	1,012	505	8.02
Punakha	93	224	131	1.66
Samdrup Jongkhar	486	1,382	947	14.14
Samtse	333	706	427	5.91
Sarpang	747	2,260	1,674	21.11
Thimphu	-	-	-	-
Trashigang	168	270	225	3.82
Trashi Yangtse	44	110	97	1.13
Trongsa	87	281	237	1.83
Tsirang	744	5,418	1,954	32.20
Wangdue Phodrang	38	95	61	1.51
Zhemgang	103	270	170	3.32
Total	**4,278**	**15,456**	**8,940**	**132.05**

Table A2.39: Pineapple production by Dzongkhag

Dzongkhag	Number of Growers	Production (MT)
Bumthang	-	-
Chhukha	185	1.83
Dagana	455	17.72
Gasa	-	-
Haa	1	0.05
Lhuentse	5	0.08
Monggar	355	19.81
Paro	-	-
Pema Gatshel	1,090	53.80
Punakha	8	0.02
Samdrup Jongkhar	727	10.41
Samtse	708	10.34
Sarpang	649	13.67
Thimphu	-	-
Trashigang	32	0.39
Trashi Yangtse	13	0.08
Trongsa	3	0.02
Tsirang	162	1.91
Wangdue Phodrang	1	-
Zhemgang	127	9.23
Total	**4,521**	**139.35**

Table A2.40: Passionfruit production by Dzongkhag

Dzongkhag	Number of Growers	Production (MT)
Bumthang	-	-
Chhukha	129	1.73
Dagana	251	6.25
Gasa	2	0.07
Haa	38	1.48
Lhuentse	116	2.06
Monggar	364	5.27
Paro	2	0.12
Pema Gatshel	289	5.25
Punakha	158	2.98
Samdrup Jongkhar	223	2.77
Samtse	318	4.78
Sarpang	254	3.98
Thimphu	1	0.00
Trashigang	91	0.76
Trashi Yangtse	40	0.26
Trongsa	155	1.89
Tsirang	377	9.40
Wangdue Phodrang	17	0.36
Zhemgang	166	3.14
Total	**2,991**	**52.54**

Table A3.1: Buffalo population by Dzongkhag

(Number)

Dzongkhag	Calf<1 year old		Heifer	Milch	Dry	Infertile/ Sterile	Total Bull	Breeding Bull	Bullock	Total
	Male	Female								
Bumthang	-	-	-	-	-	-	-	-	-	-
Chhukha	-	-	-	-	-	-	-	-	-	-
Dagana	3	2	11	6	3	-	5	4	-	30
Gasa	-	-	-	-	-	-	-	-	-	-
Haa	-	-	-	-	-	-	-	-	-	-
Lhuentse	-	-	-	-	-	-	-	-	-	-
Monggar	-	-	-	-	-	-	-	-	-	-
Paro	-	-	-	-	-	-	-	-	-	-
Pema Gatshel	-	-	-	-	-	-	-	-	-	-
Punakha	-	-	-	-	-	-	-	-	-	-
Samdrup Jongkhar	-	-	-	-	-	-	-	-	-	-
Samtse	23	24	64	44	24	3	65	15	26	247
Sarpang	5	-	3	5	1	2	3	1	-	19
Thimphu	-	-	-	-	-	-	-	-	-	-
Trashigang	-	-	-	-	-	-	-	-	-	-
Trashi Yangtse	-	-	-	-	-	-	-	-	-	-
Trongsa	-	-	-	-	-	-	-	-	-	-
Tsirang	23	17	23	35	9	-	19	3	1	126
Wangdue Phodrang	-	-	-	-	-	-	-	-	-	-
Zhemgang	-	-	-	-	-	-	-	-	-	-
Total	**54**	**43**	**101**	**90**	**37**	**5**	**92**	**23**	**27**	**422**

Table A3.2: Doeb-Doebum population by Dzongkhag

(Number)

Dzongkhag	Calf<1 year old		Heifer	Milch	Dry	Infertile/ Sterile	Total Bull	Breeding Bull	Bullock	Total
	Male	Female								
Bumthang	32	4	9	8	5	1	11	-	1	70
Chhukha	78	9	30	20	3	2	22	-	12	164
Dagana	63	37	51	80	19	3	123	-	58	376
Gasa	9	6	7	7	5	-	6	-	-	40
Haa	25	6	-	9	-	-	-	-	-	40
Lhuentse	205	53	144	108	54	17	80	-	3	661
Monggar	314	66	169	84	47	34	126	-	31	840
Paro	13	5	4	7	4	2	2	-	-	37
Pema Gatshel	8	6	20	15	2	3	18	-	1	72
Punakha	53	61	174	111	57	29	290	-	188	775
Samdrup Jongkhar	68	16	47	24	20	11	81	-	51	267
Samtse	61	29	41	19	18	-	26	-	-	194
Sarpang	124	33	25	35	5	5	42	-	13	269
Thimphu	1	-	2	-	-	-	-	-	-	3
Trashigang	200	87	211	177	23	13	102	-	13	813
Trashi Yangtse	111	48	38	98	8	20	14	-	3	337
Trongsa	54	14	30	35	-	6	37	-	29	176
Tsirang	1	1	-	3	-	-	2	-	-	7
Wangdue Phodrang	72	12	25	13	8	1	13	-	4	144
Zhemgang	212	63	108	147	59	25	103	-	48	717
Total	**1,704**	**556**	**1,135**	**1,000**	**337**	**172**	**1,098**	**-**	**455**	**6,002**

Table A3.3: Doethra-Doethrum population by Dzongkhag

(Number)

Dzongkhag	Calf<1 year old		Heifer	Milch	Dry	Infertile/ Sterile	Total Bull	Breeding Bull	Bullock	Total
	Male	Female								
Bumthang	18	10	33	23	11	7	-	40	-	102
Chhukha	111	47	158	140	28	15	-	152	90	499
Dagana	121	117	282	207	102	11	-	557	256	840
Gasa	3	6	-	9	-	-	-	1	-	18
Haa	9	7	7	18	3	-	-	-	-	44
Lhuentse	47	54	161	110	91	19	-	97	10	482
Monggar	74	57	255	140	47	85	-	118	15	658
Paro	61	59	121	99	37	35	-	63	5	412
Pema Gatshel	13	18	34	24	14	22	-	15	4	125
Punakha	91	100	43	47	12	9	-	31	16	302
Samdrup Jongkhar	16	28	37	28	10	9	-	56	45	128
Samtse	6	9	6	13	3	-	-	15	8	37
Sarpang	7	12	19	24	1	2	-	10	10	65
Thimphu	-	-	-	-	-	-	-	-	-	-
Trashigang	73	94	184	196	48	41	-	158	37	636
Trashi Yangtse	269	337	366	481	241	80	271	74	34	2,045
Trongsa	17	10	22	20	12	1	-	14	10	82
Tsirang	15	22	11	37	2	-	-	44	41	87
Wangdue Phodrang	128	122	198	251	37	6	-	276	39	742
Zhemgang	25	36	57	84	29	14	-	61	17	245
Total	**1,104**	**1,145**	**1,994**	**1,951**	**728**	**356**	**271**	**1,782**	**637**	**7,549**

Table A3.4: Jaba population by Dzongkhag

(Number)

Dzongkhag	Calf<1 year old		Heifer	Milch	Dry	Infertile/ Sterile	Total Bull	Breeding Bull	Bullock	Total
	Male	Female								
Bumthang	-	-	-	-	-	-	-	-	-	-
Chhukha	-	-	-	-	-	-	-	-	-	-
Dagana	1	1	1	2	2	-	1	-	-	8
Gasa	-	-	-	-	-	-	-	-	-	-
Haa	-	-	-	-	-	-	-	-	-	-
Lhuentse	10	4	43	23	1	35	9	-	3	125
Monggar	18	16	61	45	20	29	39	-	6	228
Paro	-	-	-	-	-	-	-	-	-	-
Pema Gatshel	12	7	20	12	5	16	28	-	15	100
Punakha	-	-	-	-	-	-	-	-	-	-
Samdrup Jongkhar	178	168	261	349	103	37	388	-	255	1,484
Samtse	86	82	55	131	12	1	237	-	132	604
Sarpang	133	124	133	260	70	19	56	-	39	795
Thimphu	-	-	-	-	-	-	-	-	-	-
Trashigang	53	59	176	120	54	60	73	-	2	595
Trashi Yangtse	2	9	7	11	2	5	8	-	-	44
Trongsa	-	-	-	-	-	-	-	-	-	-
Tsirang	-	-	-	2	-	-	-	-	-	2
Wangdue Phodrang	-	-	-	-	-	-	-	-	-	-
Zhemgang	54	38	51	94	10	6	51	-	33	304
Total	**547**	**508**	**808**	**1,049**	**279**	**208**	**890**	**-**	**485**	**4,289**

Table A3.5: Jatsha-Jatsham population by Dzongkhag

(Number)

Dzongkhag	Calf<1 year old		Heifer	Milch	Dry	Infertile/ Sterile	Total Bull	Breed-ing Bull	Bullock	Total
	Male	Female								
Bumthang	35	45	50	90	4	7	44	-	8	275
Chhukha	180	129	228	303	69	20	325	-	187	1,254
Dagana	56	53	102	100	31	5	93	-	56	440
Gasa	3	2	5	5	-	-	-	-	-	15
Haa	33	39	36	77	15	6	30	-	11	236
Lhuentse	126	150	232	371	84	52	271	-	45	1,286
Monggar	356	380	578	967	379	233	814	-	534	3,707
Paro	23	23	22	42	-	6	58	-	38	174
Pema Gatshel	6	19	52	21	7	16	81	-	47	202
Punakha	40	36	39	79	16	8	107	-	37	325
Samdrup Jongkhar	189	230	271	364	130	62	375	-	218	1,621
Samtse	62	51	103	110	75	22	68	-	6	491
Sarpang	20	24	71	219	53	14	26	-	19	427
Thimphu	1	-	1	2	-	-	14	-	1	18
Trashigang	309	441	652	1,596	242	147	693	-	347	4,080
Trashi Yangtse	46	77	116	124	38	58	89	-	23	548
Trongsa	47	49	99	118	31	6	176	-	147	526
Tsirang	12	21	17	30	5	3	24	-	8	112
Wangdue Phodrang	143	140	188	250	114	16	183	-	92	1,034
Zhemgang	266	235	235	540	129	55	362	-	229	1,822
Total	**1,953**	**2,144**	**3,097**	**5,408**	**1,422**	**736**	**3,833**	**-**	**2,053**	**18,593**

Table A3.6: Mithun population by Dzongkhag and Government Farms

(Number)

Dzongkhag	Calf<1 year old		Heifer	Milch	Dry	Infertile/ Sterile	Total Bull	Breed-ing Bull	Bullock	Total
	Male	Female								
Bumthang	-	-	-	-	-	-	1	1	-	1
Chhukha	-	-	-	-	-	-	4	4	-	4
Dagana	-	-	-	-	-	-	5	5	-	5
Gasa	-	-	-	-	-	-	-	-	-	-
Haa	-	-	-	-	-	-	5	5	-	5
Lhuentse	-	-	-	-	-	-	6	6	-	6
Monggar	-	-	-	-	-	-	27	27	-	27
Paro	-	-	-	-	-	-	-	-	-	-
Pema Gatshel	-	-	-	-	-	-	1	1	-	1
Punakha	-	-	-	-	-	-	4	4	-	4
Samdrup Jongkhar	-	-	-	-	-	-	18	18	-	18
Samtse	-	-	-	-	-	-	7	7	-	7
Sarpang	-	-	-	-	-	-	4	4	-	4
Thimphu	-	-	-	-	-	-	-	-	-	-
Trashigang	-	-	-	-	-	-	32	32	-	32
Trashi Yangtse	-	-	-	-	-	-	3	3	-	3
Trongsa	-	-	-	-	-	-	3	3	-	3
Tsirang	-	-	-	-	-	-	4	4	-	4
Wangdue Phodrang	-	-	-	-	-	-	12	12	-	12
Zhemgang	-	-	-	-	-	-	8	8	-	8
Govt. Farms	4	13	41	23	34	-	4	3	-	119
Total	**4**	**13**	**41**	**23**	**34**	**-**	**148**	**147**	**-**	**263**

Table A3.7: Nublang-Thrabum population by Dzongkhag

(Number)

Dzongkhag	Calf<1 year old		Heifer	Milch	Dry	Infertile/ Sterile	Total Bull	Breeding Bull	Bullock	Total
	Male	Female								
Bumthang	182	183	342	451	119	92	412	38	100	1,781
Chhukha	798	695	2,000	1,277	404	320	2,699	81	1,499	8,193
Dagana	938	894	1,625	1,641	442	86	2,998	37	2,081	8,624
Gasa	2	2	12	4	-	4	10	1	-	34
Haa	119	128	125	274	52	14	194	10	90	906
Lhuentse	79	90	286	222	92	44	259	14	31	1,072
Monggar	82	74	261	174	89	110	141	29	25	931
Paro	227	250	567	435	61	161	628	25	186	2,329
Pema Gatshel	3	1	13	4	3	7	8	-	4	39
Punakha	367	315	602	552	204	144	740	24	217	2,924
Samdrup Jongkhar	60	41	37	64	33	11	62	26	21	308
Samtse	2,395	2,087	4,795	4,046	1,617	692	7,037	405	3,820	22,669
Sarpang	406	393	973	677	286	62	1,589	33	936	4,386
Thimphu	93	75	243	170	45	46	153	7	17	825
Trashigang	150	153	441	337	98	113	284	20	15	1,576
Trashi Yangtse	59	49	92	113	43	59	112	2	12	527
Trongsa	265	300	475	602	174	58	617	30	430	2,491
Tsirang	326	350	658	677	148	40	1,675	24	1,275	3,874
Wangdue Phodrang	1,182	1,094	1,853	2,050	845	242	1,954	106	750	9,220
Zhemgang	35	28	51	52	13	8	69	3	43	256
Total	**7,768**	**7,202**	**15,451**	**13,822**	**4,768**	**2,313**	**21,641**	**915**	**11,552**	**72,965**

Table A3.8: Yak population by Dzongkhag and Government Farms

(Number)

Dzongkhag	Calf<1 year old		Heifer	Milch	Dry	Infertile/ Sterile	Total Bull	Breed-ing Bull	Bullock	Total
	Male	Female								
Bumthang	258	278	306	695	173	53	606	50	120	2,369
Chhukha	-	-	-	-	-	-	-	-	-	-
Dagana	-	-	-	-	-	-	-	-	-	-
Gasa	649	650	578	1,304	511	237	1,207	95	320	5,136
Haa	367	393	454	928	360	189	506	88	161	3,197
Lhuentse	19	28	29	32	64	8	27	10	-	207
Monggar	-	-	-	-	-	-	-	-	-	-
Paro	358	358	429	725	356	64	474	42	1	2,764
Pema Gatshel	-	-	-	-	-	-	-	-	-	-
Punakha	-	-	-	-	-	-	-	-	-	-
Samdrup Jongkhar	-	-	-	-	-	-	2	1	-	2
Samtse	-	-	-	-	-	-	-	-	-	-
Sarpang	-	-	-	-	-	-	-	-	-	-
Thimphu	907	877	1,185	1,889	728	47	3,113	230	1,241	8,746
Trashigang	401	517	862	1,184	110	103	934	287	221	4,111
Trashi Yangtse	10	10	11	20	30	-	45	3	-	126
Trongsa	10	13	13	26	6	-	44	-	5	112
Tsirang	-	-	-	-	-	-	-	-	-	-
Wangdue Phodrang	292	284	328	539	281	50	1,019	62	168	2,793
Zhemgang	-	-	-	-	-	-	-	-	-	-
Govt. Farms	10	9	15	30	10	10	52	13	30	136
Total	**3,281**	**3,417**	**4,210**	**7,372**	**2,629**	**761**	**8,029**	**881**	**2,267**	**29,699**

Table A3.9: Yangku-Yangkum population by Dzongkhag

(Number)

Dzongkhag	Calf<1 year old		Heifer	Milch	Dry	Infertile/ Sterile	Total Bull	Breeding Bull	Bullock	Total
	Male	Female								
Bumthang	32	51	51	87	12	9	53	-	6	295
Chhukha	78	45	301	99	21	23	212	-	69	779
Dagana	63	44	97	79	48	10	112	-	42	453
Gasa	9	2	3	13	1	1	11	-	-	40
Haa	25	16	25	44	7	-	15	-	7	132
Lhuentse	205	280	618	552	175	82	285	-	22	2,197
Monggar	314	366	935	763	358	253	613	-	284	3,602
Paro	13	17	9	12	-	4	23	-	14	78
Pema Gatshel	8	12	36	22	6	20	36	-	10	140
Punakha	53	55	105	107	28	9	136	-	27	493
Samdrup Jongkhar	68	75	199	164	59	36	258	-	167	859
Samtse	61	69	127	97	58	33	77	-	14	522
Sarpang	124	104	155	87	23	11	192	-	140	696
Thimphu	1	3	5	6	2	1	5	-	1	23
Trashigang	200	382	800	832	217	149	332	-	72	2,912
Trashi Yangtse	111	157	371	250	111	83	173	-	34	1,256
Trongsa	54	62	137	103	50	7	199	-	158	612
Tsirang	1	4	5	4	2	-	6	-	4	22
Wangdue Phodrang	72	67	102	145	39	16	90	-	28	531
Zhemgang	212	226	286	444	125	46	413	-	244	1,752
Total	**1,704**	**2,037**	**4,367**	**3,910**	**1,342**	**793**	**3,241**	**-**	**1,343**	**17,394**

Table A3.10: Zo-Zom population by Dzongkhag

(Number)

Dzongkhag	Calf<1 year old		Heifer	Milch	Dry	Infertile/ Sterile	Total Bull	Breed-ing Bull	Bullock	Total
	Male	Female								
Bumthang	2	1	1	3	-	-	1	-	1	8
Chhukha	-	-	-	-	-	-	-	-	-	-
Dagana	-	-	-	-	-	-	-	-	-	-
Gasa	-	-	-	-	-	-	-	-	-	-
Haa	-	-	-	-	-	-	-	-	-	-
Lhuentse	5	2	2	16	13	1	27	-	-	66
Monggar	-	-	-	-	-	-	-	-	-	-
Paro	-	-	-	-	-	-	-	-	-	-
Pema Gatshel	-	-	-	-	-	-	-	-	-	-
Punakha	-	-	-	-	-	-	-	-	-	-
Samdrup Jongkhar	8	3	8	2	-	-	10	-	-	31
Samtse	-	-	-	-	-	-	-	-	-	-
Sarpang	-	-	-	-	-	-	-	-	-	-
Thimphu	-	-	-	-	-	-	-	-	-	-
Trashigang	378	604	893	2,921	364	195	2,070	-	896	7,425
Trashi Yangtse	3	7	4	12	4	1	12	-	1	43
Trongsa	-	-	-	-	-	-	-	-	-	-
Tsirang	-	-	-	-	-	-	-	-	-	-
Wangdue Phodrang	-	1	-	-	-	-	10	-	5	11
Zhemgang	-	-	-	-	-	-	-	-	-	-
Total	**396**	**618**	**908**	**2,954**	**381**	**197**	**2,130**	**-**	**903**	**7,584**

Table A3.11: Equine population by Dzongkhag

(Number)

Dzongkhag	Local		Improved		Donkey	Mule	Total
	Male	Female	Male	Female			
Bumthang	283	187	-	-	30	2	502
Chhukha	25	21	8	4	40	-	98
Dagana	64	63	-	2	9	2	140
Gasa	488	64	442	36	1,678	5	2,713
Haa	295	204	18	5	115	3	640
Lhuentse	256	279	3	9	157	4	708
Monggar	88	125	3	4	36	3	259
Paro	571	302	32	28	416	41	1,390
Pema Gatshel	11	45	1	2	17	-	76
Punakha	119	114	32	56	11	-	332
Samdrup Jongkhar	43	32	-	-	22	1	98
Samtse	26	15	1	-	19	-	61
Sarpang	63	59	-	-	8	1	131
Thimphu	731	433	5	13	721	1	1,904
Trashigang	450	246	1	-	41	-	738
Trashi Yangtse	304	283	12	3	96	2	700
Trongsa	23	8	-	-	6	2	39
Tsirang	15	15	-	-	-	-	30
Wangdue Phodrang	166	97	14	9	9	-	295
Zhemgang	83	127	-	-	84	-	294
Total	**4,104**	**2,719**	**572**	**171**	**3,515**	**67**	**11,148**

Table A3.12: Pig population by Dzongkhag and Government Farms

(Number)

Dzongkhag	Local		Improved		Total
	Male	Female	Male	Female	
Bumthang	-	-	-	-	-
Chhukha	902	463	1,165	1,166	3,696
Dagana	848	598	2,247	1,883	5,576
Gasa	-	-	-	-	-
Haa	26	16	5	11	58
Lhuentse	-	-	-	7	7
Monggar	-	-	38	19	57
Paro	4	4	216	187	411
Pema Gatshel	-	-	53	42	95
Punakha	2	3	28	26	59
Samdrup Jongkhar	16	13	212	352	593
Samtse	1,220	861	1,470	1,189	4,740
Sarpang	176	122	1,653	1,809	3,760
Thimphu	5	3	112	90	210
Trashigang	2	-	51	47	100
Trashi Yangtse	3	4	103	63	173
Trongsa	-	-	11	5	16
Tsirang	309	269	2,645	2,933	6,156
Wangdue Phodrang	53	96	862	728	1,739
Zhemgang	13	5	154	91	263
Govt. Farms	99	86	898	833	1,916
Total	**3,678**	**2,543**	**11,923**	**11,481**	**29,625**

Table A3.13: Poultry population by Dzongkhag and Government Farms

(Number)

Dzongkhag	Local		Improved		Total
	Male	Female	Broiler	Layer	
Bumthang	10	49	2,036	3	2,098
Chhukha	5,310	7,680	17,112	58,731	88,833
Dagana	9,166	11,666	11,792	41,837	74,461
Gasa	9	8	313	-	330
Haa	109	646	1,413	-	2,168
Lhuentse	744	1,483	7,757	-	9,984
Monggar	914	2,741	22,724	911	27,290
Paro	111	2,223	18,670	2,254	23,258
Pema Gatshel	227	558	10,606	1	11,392
Punakha	181	777	9,271	80	10,309
Samdrup Jongkhar	1,146	2,887	12,027	5,031	21,091
Samtse	14,159	19,811	38,141	52,907	125,018
Sarpang	5,332	8,317	90,798	60,293	164,740
Thimphu	112	432	20,813	5,900	27,257
Trashigang	221	613	16,224	2	17,060
Trashi Yangtse	112	363	6,853	-	7,328
Trongsa	115	453	15,772	304	16,644
Tsirang	4,826	7,711	65,466	54,103	132,106
Wangdue Phodrang	422	1,075	14,720	3,366	19,583
Zhemgang	713	2,250	14,757	2,601	20,321
Govt. Farms	-	-	18,064	-	18,064
Total	**43,939**	**71,743**	**415,329**	**288,324**	**819,335**

Table A3.14: Sheep population by Dzongkhag and Government Farms

(Number)

Dzongkhag	Local		Improved		Total
	Male	Female	Male	Female	
Bumthang	13	7	25	32	77
Chhukha	260	390	-	-	650
Dagana	29	55	3	30	117
Gasa	-	-	-	-	-
Haa	-	-	-	-	-
Lhuentse	11	9	2	-	22
Monggar	-	1	-	-	1
Paro	-	-	-	-	-
Pema Gatshel	-	-	-	-	-
Punakha	-	-	-	-	-
Samdrup Jongkhar	23	45	-	-	68
Samtse	1,790	4,059	2	3	5,854
Sarpang	257	440	-	-	697
Thimphu	3	-	-	-	3
Trashigang	411	637	68	103	1,219
Trashi Yangtse	-	-	-	-	-
Trongsa	11	14	-	-	25
Tsirang	19	35	-	-	54
Wangdue Phodrang	183	243	-	-	426
Zhemgang	-	-	-	-	-
Govt. Farms	64	70	37	27	198
Total	**3,074**	**6,005**	**137**	**195**	**9,411**

Table A3.15: Goat population by Dzongkhag and Government Farms

(Number)

Dzongkhag	Local		Improved		Total
	Male	Female	Male	Female	
Bumthang	7	17	-	-	24
Chhukha	4,159	3,611	40	35	7,845
Dagana	6,188	6,781	65	78	13,112
Gasa	-	1	-	-	1
Haa	7	12	1	-	20
Lhuentse	-	-	4	7	11
Monggar	19	20	3	15	57
Paro	15	14	-	-	29
Pema Gatshel	14	4	1	-	19
Punakha	32	22	-	-	54
Samdrup Jongkhar	641	733	5	3	1,382
Samtse	8,751	10,296	26	32	19,105
Sarpang	3,353	3,814	119	126	7,412
Thimphu	11	11	-	-	22
Trashigang	62	43	-	1	106
Trashi Yangtse	12	9	-	-	21
Trongsa	18	16	3	2	39
Tsirang	5,589	4,969	373	387	11,318
Wangdue Phodrang	47	74	3	8	132
Zhemgang	28	31	3	6	68
Govt. Farms	-	8	4	9	21
Total	**28,953**	**30,486**	**650**	**709**	**60,798**

VERSION A

རྒྱལ་ཡོངས་རྩིས་དཔྱད་བཀོད་འཛིན།

National Statistics Bureau
Royal Government of Bhutan

INTEGRATED AGRICULTURE AND LIVESTOCK CENSUS OF BHUTAN, 2023

All the information collected will remain confidential			
MODULE 1: HOUSEHOLD IDENTIFICATION			
A1	Dzongkhag	Prefilled	
A2	Gewog	Prefilled	
A3	Chiwog	Prefilled	
A3a	Household serial number	Prefilled	
A4	Select Holder Type	1] Permanent (regular households) (>>A6-A13) [2]Temporary (DANTAK/PWD Roadside workers) (>>A10-A13) [3] Government (FARMS/Research Centres/ SoE) (>>A5,A10-A13) [4] MPU (>>A5, A10-A13>>MPU1-MPU3) [5] Schools/Institutions (>>A5,A10-A13) [6] Groups (Youth/farmers) (>>A5,A10-A13) [7] Cooperatives (>>A5,A10-A13) [8] Tshethar Tshogpa (>>A5,A10-A13>>T1) [9] Others (>>A5,A10-A13)	
A5	Name of the Holder Type		
A6	Name of the Household Head		
A7	Village		
A8	House Number		
A9	Thram Number		
A10	Name of the respondent		
A11	Contact number of the Respondent		
A12	Tap to record GPS		
A13	Tap to record Date of the Interview		

MODULE 2: CROP PRODUCTION

BC1	Did your household grow any [CEREAL] in 2023 in this gewog?	
	[1] Yes	
	[2] No (>>B3)	◯
B2.1	What CEREAL did you grow? Please select all that apply	
	[1] Irrigated paddy	
	[2] Paddy Upland (Kam Bja/Pang bara)	
	[3] Maize (Geza/Aashum/Makai)	
	[4] Wheat (Ka/Bong)	
	[5] Barley (Nay/Femong)	
	[6] Millet (Memja/Kongpu/Kodoko/Yangra)	
	[7] Sweet Buckwheat (Jarey/Guntshon)	
	[8] Bitter Buckwheat (Bjo/Khala)	
	[9] Quinoa (Azhi Zheychum/Moo)	
B2.2.1	Area sown of [CEREAL NAME] in DECIMAL	
B2.3.1	Area lost of [CEREAL NAME] in DECIMAL	
B2.4	Quantity of [CEREAL NAME] produced in KG	
B3	Did your household grow any [CEREAL] in 2023 in another gewog?	
	[1] Yes	
	[2] No (>>B11)	◯
B4	Which Dzongkhag?	
B5	Which Gewog?	
B6	Which Chiwog?	
B6.1	What CEREAL did you grow? Please select all that apply	
	[1] Irrigated paddy	
	[2] Paddy Upland (Kam Bja/Pang bara)	
	[3] Maize (Geza/Aashum/Makai)	
	[4] Wheat (Ka/Bong)	
	[5] Barley (Nay/Femong)	
	[6] Millet (Memja/Kongpu/Kodoko/Yangra)	
	[7] Sweet Buckwheat (Jarey/Guntshon)	

	[8] Bitter Buckwheat (Bjo/Khala)	
	[9] Quinoa (Azhi Haechum)	
B6.2.1	Area sown of [CEREAL NAME] in DECIMAL	
B6.3.1	Area lost of [CEREAL NAME] in DECIMAL	
B6.4	Quantity of [CEREAL NAME] produced in KG	
B11	Did your household grow any [OILSEEDS] in 2023 in this gewog?	
	[1] Yes	
	[2] No (>>B13)	◯
B12.1	What OILSEEDS did you grow? Please select all that apply	
	[1] Mustard (Pyka/Memba/Yungka)	
	[2] Sunflower (Nima meto/Gum phul)	
	[3] Soybean (Lebee/Bhatamas)	
	[4] Groundnut (Badam)	
	[5] Perilla (Naam/Selam)	
B12.2.1	Area sown of [OILSEEDS NAME] in DECIMAL	
B12.3.1	Area lost of [OILSEEDS NAME] in DECIMAL	
B12.4	Quantity of [OILSEEDS NAME] produced in KG	
B13	Did your household grow any [PULSES] in 2023 in this gewog?	
	[1] Yes	
	[2] No (>>B15)	◯
B14.1	What PULSES did you grow in 2023? Please select all that apply	
	[1] Rajma beans (Mashaam)	
	[2] Mung beans (Gakpu/Shakpu/Kalo dhaal)	
	[3] Lentil (Mussori dhaal)	
	[4] Adzuki Beans (Japanese beans)	
B14.2.1	Area sown of [PULSES NAME] in DECIMAL	
B14.3.1	Area lost of [PULSES NAME] in DECIMAL	
B14.4	Quantity of [PULSES NAME] produced in KG	
B15	Did your household grow any [VEGETABLES] in 2023 in this gewog?	
	[1] Yes	
	[2] No (>>B17)	◯

B16.1	What VEGETABLES did you grow? Please select all that apply	
	[1] Asparagus (Ngyakhagchu)	[14] Green leaves (Hoentsey/ Sag/Spinach/Paiga)
	[2] Beans (Semchum)	[15] Peas Green/fresh (Mator/ Changma/Baisem)
	[3] Brinjal (Dolom/Bando/Bai-gun)	[16] Pumpkin (Kakur/Brumsha/ Pharshee)
	[4] Broccoli	[17] Radish (Laphu/Mula)
	[5] Bulb Onion (Gop/Pyaz/ Gogpa)	[18] Squash (Baekha/Escus)
	[6] Bunching Onion/spring onion (Dong Gop dama)	[19] Tomato (Lambenda)
	[7] Cabbages (Banda Kopi)	[20] Turnip (Endo/Donai)
	[8] Carrot (Laphu Maap/Gajar)	[21] Beetroot (Nungmar)
	[9] Cauliflower (Metokopi/ Phool kopi)	
	[10] Chili small (Jetsi ema)	
	[11] Chili (Others)	
	[12] Slippery Gourd (Olachota)	
	[13] Gourd (Others-Khatem/ Lauka/Kairu)	
B16.2.1	Area sown of [VEGETABLES NAME] in DECIMAL	
B16.3.1	Area lost of [VEGETABLES NAME] in DECIMAL	
B16.4	Quantity of [VEGETABLES NAME] produced in KG	
B17	Did your household grow any [SPICES] in 2023 in this gewog?	
	[1] Yes	
	[2] No (>>B18.6)	
B18.1	What [SPICES] did you grow? Please select all that apply	
	[1] Cardamom (Alanchi)	[5] Garlic leaves (Chagop dama/Lasun pata/Lamshaba)
	[2] Ginger (Saga/Aduwa)	[6] Coriander (Yuse/Daneya)
	[3] Turmeric (Yongka/Haldi)	[7] Sichuan Pepper (Timbur/ Thingey/Ghee)
	[4] Garlic bulb (Chagop/Lasun)	

B18.2.1	[5] Garlic leaves (Chagop dama/Lasun pata/Lamshaba)	
B18.3.1	[6] Coriander (Yuse/Daneya)	
B18.4	[7] Sichuan Pepper (Timbur/Thingey/Ghee)	
B18.6	Did your household grow any [CARDAMOM/GINGER] in 2023 in another gewog?	
	[1] Yes	
	[2] No (>>B19)	
B18.7	Which Dzongkhag?	
B18.8	Which Gewog?	
B18.9	Which Chiwog?	
B18.9a	What [SPICES (Cardamom or Ginger)] did you grow? Please select all that apply	
	[1] Cardamom (Alanchi)	
	[2] Ginger (Saga/Aduwa)	
B18.10	Area sown of [CARDAMOM/GINGER] in DECIMAL	
B18.12	Area lost of [CARDAMOM/GINGER] in DECIMAL	
B18.15	Quantity of [CARDAMOM/GINGER] produced in KG	
B19	Did your household grow any [ROOTS AND TUBER] in 2023 in this gewog?	
	[1] Yes	
	[2] No (>>B21.5.3)	
B20	What [ROOTS AND TUBER] did you grow? Please select all that apply	
	[1] Potato (Pasong/Kaeva/Alu)	
	[2] Sweet Potato (Kaeva-Ngarm/Sakar khanda/Yengorong)	
	[3] Cassava_Tapioca (Shingjoktang/Deyshe-Kaeva/Semal tarul)	
	[4] Taro_Yautia_Collocasia (Bozong/Daw/Piralu)	
	[5] Ground apple	
B21.2.1	Area sown of [ROOTS AND TUBER NAME] in DECIMAL	
B21.3.1	Area lost of [ROOTS AND TUBER NAME] in DECIMAL	
B21.4	Quantity of [ROOTS AND TUBER NAME] produced in KG	

B21.5.3	Did your household grow any [POTATO] in 2023 in another gewog?	
	[1] Yes	
	[2] No (>>B21)	
B21.5.4	Which Dzongkhag?	
B21.5.5	Which Gewog?	
B21.5.6	Which Chiwog?	
B21.5.7	Area sown of [POTATO] in DECIMAL	
B21.5.9	Area lost of [POTATO] in DECIMAL	
B21.5.12	Quantity of [POTATO] produced in KG	
B21	Did your household have any [FRUITS] trees in 2023 in this gewog?	
	[1] Yes	
	[2] No (>>B23)	
B22.1	What [FRUITS] trees did you have? Please select all that apply	
	[1] Apple	[19] Persimmon (Aunday)
	[2] Apricot (Kham chungku)	[20] Pineapple (Jana congtse/ Anaras)
	[3] Areca-nut (Doma/Guwae)	[21] Plum (Choolee/Say-choorpu/ Ambagara)
	[4] Avacado (Zhungge Gule/ Baruwa)	[22] Pomegranate (Sindu/ Thalemsey)
	[5] Banana (Ngala/Lai say/ Kayla)	[23] Tree tomato (Ruk tomato/Shing lambenda)
	[6] Dragon fruit (Gewaringpa)	[24] Walnut (Tago/Khey say/Okhar)
	[7] Guava (Bebpasue/Ambak)	[25] Almond
	[8] Hazelnut (Hazay)	[26] Strawberry
	[9] Jackfruit (Damsay/Dremleng/Kathar)	[27] Chestnut
	[10] Kiwi (Zhempaykotong)	[28] Pecannut
	[11] Lemons and Limes (Kapoor zaymo/Limbu)	[29] Cherry
	[12] Litchi	[30] Watermelon (Apa guto/Kharay muza) (>>FR6&FR7)

	[13] Mandarin (Tshelu/Soontala)	31] Cucumber (Goenchu/Mang-pung/Kakra) (>>FR6&FR7)
	[14] Mango (Amchukoli/Am say/Amp)	
	[15] Papaya (Modhufala/Mewa)	
	[16] Passion Fruit (Jaga chup/Zargong/Garanda)	
	[17] Peach (Kham/lengsey/Aru)	
	[18] Pear (Lee/Lee tong/Naspati)	
B22.2	Total number of [FRUIT NAME] trees	
B22.3	Bearing number of [FRUIT NAME] trees	
B22.5	Quantity of [FRUIT NAME] produced in KG	
B22.6	Area sown of [Watermelon/Cucumber] in DECIMAL	
B22.7	Area lost of [Watermelon/Cucumber] in DECIMAL	
B22.8	Quantity of [Watermelon/Cucumber] produced in KG	
B23	Did your household have any [FRUITS-Apple/Arecanut/Mandarin] trees in 2023 in another gewog?	
	[1] Yes	
	[2] No (>>C1)	
B24	Which Dzongkhag?	
B25	Which Gewog?	
B26	Which Chiwog?	
B26.1	What [FRUITS] trees did you have? Please select all that apply	
	[1] Apple	
	[2] Arecanut (Doma/Guwae/Guwa)	
	[3] Mandarin (Tshelu/Soontala)	
B26.2	Total number of [FRUIT NAME] trees	
B26.3	Bearing number of [FRUIT NAME] trees	
B26.5	Quantity of [FRUIT NAME] produced in KG	

MODULE 3: LIVESTOCK PRODUCTION

C1	Did you rear any [CATTLE] during the reference year [1] Yes [2] No (>>PM1)	
C2	What CATTLE did you rear? Please select all that apply [1] Jersey [2] Brown Swiss [3] Holstein-Friesian [4] Jatsha-Jatsham [5] Yangku-Yangkum [6] Doeb-Doebum [7] Doethra-Doethram [8] Nublang-Thrabum [9] Jaba	
C3	Total number of [Milking cow] as on 31 December, 2023	
C4	Total no. of days milked	
C5	Average Milk produced per day per [Milking cow]	
C6	Total [MILK] produced from milking cow in Ltr.	(System-calculated)
C7	Total number of [Dry cow] as on 31 December,2023	
C8	Total no. of days milked	
C9	Average Milk produced per day per [Dry cow]	
C10	Total [MILK] produced from Dry cow in Ltr.	(System-calculated)
C7a	Total number of [dead/sold cow] as on 31 December,2023 but were milked during the reference year	
C8a	Total no. of days milked [dead/sold cows]	
C9a	Average Milk produced per day per [dead/sold cow]	
C10a	Total [MILK] produced from [dead/sold] cows in Ltr.	(System-calculated)
C11	Grand Total [MILK] produced in Ltr.	
C12	Total number of [Male Calf less than 1 year] as on 31 December 2023	
C13	Total number of [Female Calf less than 1 year] as on 31 December 2023	
C14	Total number of [Heifer-Yarbu/Korali/Batham] as on 31 December 2023	
C15	Total number of infertile cows [Sterile-old] as on 31 December 2023	
C16	Total number of [Bull-all types] as on 31 December 2023	

C17	Total number of [Breeding Bull-Phalang/Bew Goru/Phatoka] as on 31 December 2023	
C18	Total number of [Bullock] as on 31 December 2023	
C19	Total number of [Death] during the reference year	
C20	What were the main causes of death?	
	[1] Disease	
	[2] Wildlife Predation (death due to Tiger, bear, etc.)	
	[3] Natural Death (e.g. due to old age)	
	[4] Accident	
	[5] Others	
C21	Total number of [Death animal] consumed or sold of the total death declared	
C22	Average carcass weight in KG	(System-calculated)
C23	Total [MEAT] produced in KG from death animal	
C24	Total number of [Cattle name] sold/slaughtered for meat purpose during the reference year	(System-calculated)
C25	Average carcass weight per cattle in KG	(System-calculated)
C26	Total [MEAT] produced in KG from sold/slaughtered animal	(System-calculated)
C27	Grand Total [MEAT] produced in KG	
C28	Total Mill produced from different cattle type	
C29	Total Milk process in Ltr. during the reference year from all cattle	
C30	Total Butter produced in KG during the reference year froma all cattle	
C31	Total Cheese produced in KG during the reference year from all cattle	
PM1	Did you rear any[PURE MITHUN-Bamay/Bamen/Mencha/Menchamin] during the reference year	
	[1] Yes	
	[2] No (>>Y1)	
PM2	Total number of [Milking Mithun] as on 31 December 2023	
PM3	Total no. of days milked of [Milking] Mithuns	
PM4	Average Milk produced per day per Milking mithun in Ltr.	
PM5	Total [MILK] produced from Milking mithun in Ltr.	
PM6	Total number of [Dry] mithun as on 31 December 2023	
PM7	Total no. of days milked for [Dry] mithun during the reference year.	

PM8	Average Milk produced per day per [Dry] mithun in Ltr.	
PM9	Total [MILK] produced from Dry mithun in Ltr.	(System-calculated)
PM6a	Total number of [dead/sold] mithun but milked during the reference year.	
PM7a	Total no. of days milked for [dead/sold] mithun during the reference year.	
PM8a	Average Milk produced per day per [dead/sold] mithun in Ltr.	
PM9a	Total [MILK] produced from Dead/sold mithun in Ltr.	(System-calculated)
PM10	Grand Total [MILK] produced from Mithun in Ltr.	(System-calculated)
PM11	Total [MILK] processed in Ltr. during the reference year	
PM12	Total [BUTTER] produced in KG during the reference year	
PM13	Total [CHEESE] produced in KG during the reference year	
PM14	Total number of [Male Calf less than 1 year] as on 31 December 2023	
PM15	Total number of [Female Calf less than 1 year] as on 31 December 2023	
PM16	Total number of [Heifer-Yarbu/Korali/Batham] as on 31 December 2023	
PM17	Total number of infertile mithun [Sterile-old] as on 31 December 2023	
PM18	Total number of [Bull-all types] as on 31 December 2023	
PM19	Total number of [Breeding Bull-Phalang/Bew Goru/Phatoka] as on 31 December 2023	
PM20	Total number of [Death] during the reference year	
PM21	What were the main causes of death?	
	[1] Disease	
	[2] Wildlife Predation (death due to Tiger, bear, etc.)	
	[3] Natural Death (e.g. due to old age)	
	[4] Accident	
	[5] Others	
	[2] No (>>Y1)	
PM22	Total number of [Death animal] consumed or sold during the reference year	
PM23	Average carcass weight in KG	
PM24	Total [MEAT] produced in KG from death Mithun	
PM25	Total number of [Cattle name] sold/slaughtered for meat purpose during the reference year	

PM26	Average carcass weight per cattle in KG	
PM27	Total [MEAT] produced in KG from sold/slaughtered Mithun	
PM28	Grand Total [MEAT] produced in KG from Mithun	
PM29	Did you rear any[Mithun breeding bull-Bamay/Mencha]during the reference year [1] Yes [2] No (>>Y1)	
PM30	Total number of [Mithun Breeding Bull-Bamay/Mencha] as on 31 December 2023	
Y1	Did you rear any[YAK]during the reference year [1] Yes [2] No (>>Z1)	
Y2	Total number of [Milking Yak] as on 31 December 2023	
Y3	Total no. of days milked for milking yak	
Y4	Average Milk produced per day per milking yak in Ltr.	
Y5	Total [MILK] produced from milking Yak in Ltr.	
Y6	Total number of [Dry] yak as on 31 December 2023	
Y7	Total no. of days milked for [Dry] yak during the referece year	
Y8	Average Milk produced per day per [Dry] yak in Ltr.	
Y9	Total [MILK] produced from Dry Yak in Ltr.	
Y11	Total [MILK] processed in Ltr. during the reference year	
Y12	Total [BUTTER] produced in KG during the reference year	
Y13	Total [CHUGO] produced in KG during the reference year	
Y14	Total [ZEYTEY] produced in KG during the reference year	
Y14a	Total [PHELU] produced in KG during the reference year	
Y15	Total number of [Male Calf less than 1 year] as on 31 December 2023	
Y16	Total number of [Female Calf less than 1 year] as on 31 December 2023	
Y17	Total number of [Heifer-Yarbu/Korali/Batham] as on 31 December 2023	
Y18	Total number of infertile yak [Sterile-old] as on 31 December 2023	
Y19	Total number of [Bull-all types] as on 31 December 2023	
Y20	Total number of [Breeding Bull-Phalang/Bew Goru/Phatoka] as on 31 December 2023	

Y21	Total number of [Bullock] as on 31 December 2023
Y22	Total number of [Death] during the reference year
Y23	What were the main causes of death? [1] Disease [2] Wildlife Predation (death due to Tiger, bear, etc.) [3] Natural Death (e.g. due to old age) [4] Accident [5] Others
Y24	Total number of [Death animal] consumed or sold
Y25	Average carcass weight in KG per Yak
Y27	Total number of [Yak] sold/slaughtered for meat purpose during the reference year
Y28	Average carcass weight in KG per Yak
Y31	Total number of [Yak sheared for fibre wool production] during the reference year in KG
Y32	Average fibre wool produced per shearing per Yak in KG
Z1	Did you rear any [ZO-ZOM] during the reference year [1] Yes [2] No (>>B1)
Z2	Total number of [Milking Zom] as on 31 December 2023
Z3	Total no. of days milked
Z4	Average Milk produced in a day in Ltr.
Z6	Total number of [Dry-those milked during the reference year but dry now as on 31 December 2023]
Z6a	Total number of [Dry-those milked during the reference year but dead or sold]
Z7	Total no. of days milked
Z8	Average Milk produced in a day in Ltr.
Z11	Total [MILK] processed in Ltr. during the reference year
Z12	Total [BUTTER] produced in KG during the reference year
Z13	Total [CHEESE] produced in KG during the reference year
Z14	Total number of [Male Calf less than 1 year] as on 31 December 2023
Z15	Total number of [Female Calf less than 1 year] as on 31 December 2023
Z16	Total number of [Heifer-Yarbu/Korali/Batham] as on 31 December 2023

Z17	Total number of infertile zom [Sterile-old] as on 31 December 2023
Z18	Total number of [Bull-all types] as on 31 December 2023
Z19	Total number of [Bullock] as on 31 December 2023
Z20	Total number of [Death] during the reference year
Z21	What were the main causes of death?
	[1] Disease
	[2] Wildlife Predation (death due to Tiger, bear, etc.)
	[3] Natural Death (e.g. due to old age)
	[4] Accident
	[5] Others
Z22	Total number of [Death Zo-Zom] consumed or sold during the reference year
Z23	Average carcass weight per Zo-Zom in KG
Z25	Total number of [Cattle name] sold/slaughtered for meat purpose during the reference year
Z26	Average carcass weight per Zo-Zom in KG
B1	Did you rear any [BUFFALO] during the reference year
	[1] Yes
	[2] No (>>E1)
B2	Total number of [Milking buffalo] as on 31 December 2023
B3	Total no. of days milked
B4	Average Milk produced in a day in Ltr.
B6	Total number of [Dry-those milked during the reference year but dry now as on 31 December 2023]
B6a	Total number of [Dry-those milked during the reference year but dead or sold]
B7	Total no. of days milked
B8	Average Milk produced in a day in Ltr.
B11	Total [MILK] processed in Ltr. during the reference year
B12	Total [BUTTER] produced in KG during the reference year
B13	Total [CHEESE] produced in KG during the reference year

B14	Total number of [Male Calf less than 1 year] as on 31 December 2023	
B15	Total number of [Female Calf less than 1 year] as on 31 December 2023	
B16	Total number of [Heifer-Yarbu/Korali/Batham] as on 31 December 2023	
B17	Total number of [Dry-Sterile] as on 31 December 2023	
B18	Total number of [Bull-all types] as on 31 December 2023	
B19	Total number of [Bullock] as on 31 December 2023	
B20	Total number of [Death] during the reference year	
B21	What were the main causes of death?	
	[1] Disease	
	[2] Wildlife Predation (death due to Tiger, bear, etc.)	
	[3] Natural Death (e.g. due to old age)	
	[4] Accident	
	[5] Others	
B22	Total number of [Death animal] consumed or sold	
B23	Average carcass weight in KG	
B25	Total number of [Buffalo] sold/slaughtered for meat purpose during the reference year	
B26	Average carcass weight per cattle in KG	
E1	Did you rear any [EQUINE-horse/mule/donkey] during the reference year?	
	[1] Yes	
	[2] No (>>P1)	
E2	What EQUINE did you rear? Please select all that apply	
	[1] Horse	
	[2] Mule	
	[3] Donkey	
E3	Total number of [LOCAL MALE] as on 31 December 2023	
E4	Total number of [LOCAL FEMALE] as on 31 December 2023	
E5	Total number of [IMPROVED MALE] as on 31 December 2023	
E6	Total number of [IMPROVED FEMALE] as on 31 December 2023	

E7	Total number of [MULE-Drey/Khachar] as on 31 December 2023	
E8	Total number of [DONKEY-Bongku/Gadha] as on 31 December 2023	
E9	Total number of [Death] during the reference year	
P1	Did you rear any [PIG] during the reference year?	
	[1] Yes	
	[2] No (>>PO1)	
P6	What was the reason for rearing [PIG] during the reference year? Please select all that applies	
	[1] Breeding (Piglet production)	
	[2] Fattening (Meat production)	
P1.2	What [PIG TYPE] did you rear during the reference year?	
	[1] Local Pig [Yue Phap]	
	[2] Improved Pig [Zhung Phab/Ja Phab]	
P2	Total number of [LOCAL MALE PIG] as on 31 December 2023	
P3	Total number of [LOCAL FEMALE PIG] as on 31 December 2023	
P7	Total number of [Death of LOCAL PIG] during the reference year	
P8	What were the main causes of death?	
	[1] Disease	
	[2] Wildlife Predation (death due to Tiger, bear, etc.)	
	[3] Natural Death (e.g. due to old age)	
	[4] Accident	
	[5] Others	
P9	Average carcass weight per pig in KG	
P15	Total number of [LOCAL PIG] sold/slaughtered for meat purpose during the reference year	
P16	Average carcass weight per pig in KG	
P4	Total number of [IMPROVED MALE PIG] as on 31 December 2023	

P5	Total number of [IMPROVED FEMALE PIG] as on 31 December 2023
P11	Total number of [Death of IMPROVED PIG] during the reference year
P12	What were the main causes of death?
	[1] Disease
	[2] Wildlife Predation (death due to Tiger, bear, etc.)
	[3] Natural Death (e.g. due to old age)
	[4] Accident
	[5] Others
P13	Average carcass weight per pig in KG
P18	Total number of [IMPROVED PIG] sold/slaughtered for meat purpose during the reference year
P19	Average carcass weight in KG
PO1	Did you rear any [POULTRY] during the reference year?
	[1] Yes
	[2] No (>>S1)
PO2	What [POULTRY Type] did you rear? Please select all that apply
	[1] Local poultry
	[2] Improved poultry
PO3	Total number of [LOCAL MALE] poultry as on 31 December 2023
PO4	Total number of [LOCAL FEMALE] poultry as on 31 December 2023
PO5	Total number of [LOCAL LAYER] poultry
PO6	Average laying days (No. of days layed)
PO9	Total number of [IMPROVED LAYER] poultry
PO10	Average laying days (No. of days laid)
PO13	Total number of [Death of LOCAL POULTRY] during the reference year
PO14	What were the main causes of death?
	[1] Disease
	[2] Wildlife Predation (death due to Tiger, bear, etc.)
	[3] Natural Death (e.g. due to old age)

	[4] Accident		
	[5] Others		
PO15	Average carcass weight per bird in KG		
PO17	Total number of [LOCAL-spent birds] sold/slaughtered for meat purpose during the reference year		
PO18	Average carcass weight per bird in KG		
PO20	Total number of [Death of LAYERS] during the reference year		
PO21	What were the main causes of death?		
	[1] Disease		
	[2] Wildlife Predation (death due to Tiger, bear, etc.)		
	[3] Natural Death (e.g. due to old age)		
	[4] Accident		
	[5] Others		
PO22	Average carcass weight per bird in KG		
PO24	Total number of [LAYER-spent birds] sold/slaughtered for meat purpose during the reference year		
PO25	Average carcass weight per bird in KG		
PO8	Total number of [BROILER] poultry		
PO27	Total number of [Death of BROILERS] during the reference year		
PO28	What were the main causes of death?		
	[1] Disease		
	[2] Wildlife Predation (death due to Tiger, bear, etc.)		
	[3] Natural Death (e.g. due to old age)		
	[4] Accident		
	[5] Others		
PO29	Average carcass weight per bird in KG		
PO31	Total number of [BROILER] sold/slaughtered for meat purpose during the reference year		
PO32	Average carcass weight per bird in KG		

S1	Did you rear any [SHEEP] during the reference year?	
	[1] Yes	
	[2] No (>>G1)	
S2	What SHEEP type did you rear? Please select all that apply	
	[1] Local	
	[2] Improved	
S3	Total number of [LOCAL MALE SHEEP] as on 31 December 2023	
S4	Total number of [LOCAL FEMALE SHEEP] as on 31 December 2023	
S5	Total number of [Death of LOCAL SHEEP] during the reference year	
S6	What were the main causes of death?	
	[1] Disease	
	[2] Wildlife Predation (death due to Tiger, bear, etc.)	
	[3] Natural Death (e.g. due to old age)	
	[4] Accident	
	[5] Others	
S7	Average carcass weight per sheep in KG	
S8	Total mutton produced from [Death of LOCAL SHEEP] in KG	(System-calculated)
S9	Total number of [LOCAL SHEEP] sold/slaughtered for meat purpose during the reference year	
S10	Average carcass weight per sheep in KG	(System-calculated)
S11	Total mutton produced from [LOCAL SHEEP] sold/slaughtered for meat purpose in KG	
S12	Total number of [IMPROVED MALE SHEEP] as on 31 December 2023	
S13	Total number of [IMPROVED FEMALE SHEEP] as on 31 December 2023	
S14	Total number of [Death of IMPROVED SHEEP] during the reference year	
S15	What were the main causes of death?	
	[1] Disease	
	[2] Wildlife Predation (death due to Tiger, bear, etc.)	
	[3] Natural Death (e.g. due to old age)	
	[4] Accident	(System-calculated)
	[5] Others	
S16	Average carcass weight per sheep in KG	
S17	Total mutton produced from [Death of IMPROVED SHEEP] in KG	
S18	Total number of [IMPROVED SHEEP] sold/slaughtered for meat purpose during the reference year	

S19	Average carcass weight per sheep in KG	
S20	Total mutton produced from [IMPROVED SHEEP] sold/slaughtered for meat purpose in KG	(System-calculated)
S21	Grand Total mutton produced in KG	
S22	Total number of [Sheep sheared for wool production] during the reference year in KG	(System-calculated)
S23	Average wool produced per shearing per Sheep in KG	
S24	Total wool production in KG from Sheep	(System-calculated)
G1	Did you rear any [GOAT] during the reference year?	
	[1] Yes	
	[2] No (>>H1)	
G2	What GOAT type did you rear? Please select all that apply	
	[1] Local	
	[2] Improved	
G3	Total number of [LOCAL MALE GOAT] as on 31 December 2023	
G4	Total number of [LOCAL FEMALE GOAT] as on 31 December 2023	
G5	Total number of [Death of LOCAL GOAT] during the reference year	
G6	What were the main causes of death?	
	[1] Disease	
	[2] Wildlife Predation (death due to Tiger, bear, etc.)	
	[3] Natural Death (e.g. due to old age)	
	[4] Accident	
	[5] Others	
G7	Average carcass weight per goat in KG	
G8	Total chevon produced from [Death of LOCAL GOAT] in KG	(System-calculated)
G9	Total number of [LOCAL GOAT] sold/slaughtered for meat purpose during the reference year	
G10	Average carcass weight per goat in KG	
G11	Total chevon produced from [LOCAL GOAT sold or slaughtered] for meat purpose in KG	(System-calculated)
G12	Total number of [IMPROVED MALE GOAT] as on 31 December 2023	
G13	Total number of [IMPROVED FEMALE GOAT] as on 31 December 2023	
G14	Total number of [Death of IMPROVED GOAT] during the reference year	

G15	What were the main causes of death? [1] Disease [2] Wildlife Predation (death due to Tiger, bear, etc.) [3] Natural Death (e.g. due to old age) [4] Accident [5] Others	
G16	Average carcass weight per improved goat in KG	
G18	Total number of [IMPROVED GOAT] sold/slaughtered for meat purpose during the reference year	
G19	Average carcass weight per improved goat in KG	
G20	Total chevon produced from [IMPROVED GOAT sold or slaughtered] for meat purpose in KG	
G21	Grand Total chevon produced in KG	
H1	Did you practice [APICULTURE] during the reference year? [1] Yes [2] No (>>F1)	
H2	What [TYPE OF BEEHIVES] did you have? Please select all that apply [1] Local bee [2] Improved bee	
H3	Total number of [LOCAL BEEHIVES] during the reference year	
H4	Total [HONEY] produced in KG from local beehives	
H5	Total number of [IMPROVED BEEHIVES] during the reference year	
H6	Total [HONEY] produced in KG from improved beehives	(System-calculated)
H7	Grand Total [HONEY] produced in KG	
F1	Did you practice [AQUACULTURE] during the reference year? [1] Yes [2] No (>>END)	
F2	Total number of [FISH POND] as on 31 December 2023	
F3	Total area covered by the [FISH POND] in square metres	
F4	What [FISH] did you have? Please select all that apply [1] Comp. Carp	

	[2] Grass Carp
	[3] Rohu
	[4] Cattla
	[5] Brown Trout
	[6] Rainbow Trout
	[7] Snow Trout
	[8] Mrigal
	[9] Silver Carp
	[10] Sturgeon
	[11] Others
F5	Total number of [FINGERLINGS] received during the reference year
F6	Total [FISH] harvested in KG during the reference year
F7	Total number of [FISH] in the pond as on 31 December 2023
MPU1	Total [MILK] processed in Ltr. in your MPU during the reference year
MPU2	Total [BUTTER] produced in KG in your MPU during the reference year
MPU3	Total [CHEESE] produced in KG in your MPU during the reference year
T1	What [Livestock Type] did you have? Please select all that apply
	[1] Jersey
	[2] Brown Swiss
	[3] Holstein-Friesian
	[4] Jatsha-Jatsham
	[5] Yangku-Yangkum
	[6] Doeb-Doebum
	[7] Doethra-Doethram
	[8] Nublang-Thrabum
	[9] Jaba
	[10] Yak
	[11] Zo-Zom
	[12] Pig
	[12] Sheep
	[14] Goat

T1.1	Total number of [Livestock Name] as on 31 December 2023	
T1.3	Total number of [Death] during the reference year	
T1.4	What were the main causes of death?	
	[1] Disease	
	[2] Wildlife Predation (death due to Tiger, bear, etc.)	
	[3] Natural Death (e.g. due to old age)	
	[4] Accident	
	[5] Others	
T1.5	Total number of [Death-whose meat was consumed] during the reference year	
T1.6	Average carcass weight in KG	
T1.7	Total meat produced from [livestock- death] in KG from Tshethar Tshogpa	(System-calculated)
END	Tap to record End Time	