AGRICULTURE STATISTICS 2019

Renewable Natural Resources Statistics Division
Directorate Services

ROYAL GOVERNMENT OF BHUTAN
MINISTRY OF AGRICULTURE AND FORESTS

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Statistics Division (RSD)
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Technical Team involved in analysis and report writing:

1. Tobden Tobden, Chief Statistical Officer
2. Manisha Subbha, Survey Section
3. Thinley Yangzom, Survey Section
4. Sonam Penjor, GIS Section
5. Rinchen Dorji, GIS Section
6. Kinlay Wangmo, Administrative Data Section
7. Karma Tenzin, Administrative Data Section

Renewable Natural Resources Statistics Division (RSD)
Directorate Services
Ministry of Agriculture and Forests
rsd@moaf.gov.bt

FOREWORD

The Ministry of Agriculture and Forests (MoAF) is pleased to release the Annual Agriculture Statistics 2019 publication. It presents statistics on the profile of the farming population in the country w.r.t the crop area, yield and production. This report contains production statistics at Dzongkhag level and the additional statistics disaggregated by gewog will be made available through statistical release by the RSD. I hope that the report will be a key source of information for policy makers, planners and international community.

I would like to thank RNR Statistics Technical Working Group (RS-TWG), officials of RNR Statistics Division (RSD), Gewog Agriculture Extension Supervisors for their constant effort in collecting the information from agriculture households and supporting the RNR statistical framework in the country.

(Rinzin Dorji)
SECRETARY
Ministry of Agriculture and Forests

ACKNOWLEDGEMENT

The Annual Agriculture Statistics 2019, published by RNR Statistics Division (RSD) provides a wealth of information on agriculture related indicators. Through this report, the RSD consolidates statistics and indicators that can respond to the needs of our data users.

As the RSD strives to improve its statistical publications and services, we would like to welcome comments and feedbacks on the contents and format of this publication. I on behalf of the RSD, I would like to convey our appreciation and gratitude to all the Agriculture Extension Supervisors and Dzongkhag Agriculture Officers for their continued support and cooperation in collecting data from farmers.

Further, I would like to thank technical guidance and support of RS-TWG for their unwavering support and facilitation for the annual agriculture survey. Finally, I would also like to thank all our valued farmers for sharing the information.

(Rabgye Tobden)
DIRECTOR
Directorate Services
Ministry of Agriculture and Forests

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CHAPTER 1: INTRODUCTION

1.1 Background

The RNR Statistics Division (RSD) under the Directorate Services, Ministry of Agriculture and Forests is mandated to conduct the Annual Agriculture Sample Survey (AASS). The first Survey was initiated in 2004 by the Ministry and since then, the annual publication endeavours to present a comprehensive information on area, production and yield of principal crops viz: cereals, oilseeds and legumes, vegetables, fruit crops, roots & tubers and other permanent crops.

The 2019 AASS enumerated 19,751 households, approximately 30% of the total agricultural households in the country. The survey collected data on the crop production chiefly focusing among many other on cereals, oilseeds and legumes, vegetables, fruits, roots and tubers, and permanent crops. Additional information on the input used by the households for crop production, harvest loss and sale of crop produced during the reporting period were also collected.

This report presents key findings from the survey, which are expected to be useful to the Government and other development partners to assess achievements in the RNR Sector and further help in formulating plans and policies based on the data. The Rural Development and Climate Change Response Programme of EU (EU RDCCRP) funded the 2019 AASS.

1.2 Objective of the survey

To gauge the data gap of the country for having a reliable data for assisting the planning and developmental activities of RNR sector,

the role of the annual agriculture survey is of much value, as it provides the profile of agriculture households in the country. The following are specific objectives of the 2019 AASS:

- To generate and meet the data requirements of the RNR sector in the country for the preparation of plans, programs and to assess the achievements;

- To establish reliable information on crop production and land use for planning and monitoring of agriculture development programmes;

- To collect information on indicators like annual crop production, yield and agricultural engaged area, fruit crop production and trees estimates, etc;

- Prepare time series data of land use and agriculture production trend; and

- To provide baseline data on RNR Sector on time and to strengthen the statistical system of the country by way of provisioning efficient use of the existing facilities, capacity building on human resources, infrastructure, technological innovations, etc.

1.3 Sampling Design

Undertaking a census or a survey is a complex and resource intensive. It entails extensive preparation and planning both in terms of human capacity and financial resources.

The sample for the 2019 AASS was designed to provide estimates for a larger number of agriculture households. A stratified uni-stage

sampling design was employed and a Circular Systematic Sampling (CSS) approach was used to select the participating households from the Gewogs. All the 20 Dzongkhags and 205 Gewogs were sampled.

1.4 Sampling frame for the survey

The 2019 AASS used the sampling frame from the 2019 RNR Census with the updated household list received from the Gewog Agriculture Extension Supervisors (GAESs). The GAESs annually updates the household listing and submit to the RSD prior to the survey.

1.5 Sample Size determination

Given that geographical distribution of crops in Bhutan is based on the different ecological and climatic zones; it is not feasible to produce precise survey results for all crops in each gewog or sub district level. This is because agriculture has many indicators to be estimated like annual crop production, yield, and agriculture crop area and fruit trees estimates, etc. Thus, there is a challenge to come up with a reasonable sample size, which could give precise unbiased efficient estimates. Further, the farmers in Bhutan practice conventional mix farming system with small land holdings and this further makes it difficult for the sample size determination.

The 2019 AASS adopted the earlier approach of determining the sample size based on the agriculture utilized areas of farming households at Gewog (sub district) level as an indicator for sample size calculation. Additionally, the sample size was adjusted at the gewog level domain using the variation of number of various crops grown within a gewog.

The initial sample size is calculated as:

$$n_0 = \left(\frac{z * 100 * CV_{area}}{p}\right)^2$$

Where $n_0 = initial\ sample\ size$;
$z = statistics\ that\ defines\ the\ level\ of\ confidence\ desired.\ At\ 95\ Confidence\ interval,\ the\ value\ of\ z = 1.96$
$CV = co - efficient\ of\ variation, where\ CV = \frac{SD}{\bar{x}}$
$p = value\ of\ population\ proportion\ or\ margin\ of\ error\ which\ is\ set\ at\ 0.15\ at\ gewog\ level.$

The final sample size is calculated by using the population correction factor:

$$n = \frac{n_0}{\left(1 + \frac{n_0}{N}\right)}$$

Where $N\ is\ the\ total\ farming\ population\ in\ the\ country.$

1.6 Sample allocation

A total of 19,831 households were allocated to all Dzongkhags. Table 1.1 shows the breakup of sample sizes by Dzongkhags.

Table 1. 1 Sample size allocation by dzongkhag

Dzongkhag	Total Gewog	Total HHs	Sample HHs
Bumthang	4	1,247	402
Chhukha	11	4,164	1,079
Dagana	14	4,050	1,328
Gasa	4	562	274
Haa	6	1,437	550
Lhuntse	8	2,061	738
Monggar	17	5,126	1,674
Paro	10	3,266	975
Pema Gatshel	11	3,256	1,059
Punakha	11	2,356	951
Samdrup Jongkhar	11	3,861	1,087
Samtse	15	9,209	1,775
Sarpang	12	5,051	1,267
Thimphu	8	1,209	516
Trashigang	15	6,228	1,624
Trashi Yangtse	8	2,582	803
Trongsa	5	1,469	487
Tsirang	12	3,663	1,199
Wangdue Phodrang	15	3,345	1,292
Zhemgang	8	2,057	750
TOTAL	**205**	**66,199**	**19,831**

1.7 Adjustment of non-response weight

To adjust for the loss of representativeness caused by non-responding households, the weight of the responding units ($\boldsymbol{W_{t\_}E_h}$)

was increased by deploying the inverse of the percentage responding units from the sample.

$$Non-response\ weight\ (W_{nr}) = \frac{1}{(S_h/E_h)} = \frac{E_h}{S_h}$$

Where $S_h = Sample\ households\ in\ the\ Gewog; and$
$E_h = Enumerated\ households\ in\ the\ Gewog.$

The design weight or base weight is the inverse of probability of selection of the sample. Based on the Circular Systematic Sampling (CSS) design, the probability of selection for the sample households in a gewog was calculated as follows:

$$Design\ weight\ (W_d) = k = \frac{N_h}{S_h}$$

Where $N_h = total\ households\ in\ the\ Gewog; and$

$$S_h = sample\ households\ in\ the\ Gewog.$$

Thus, the final weight

$$Final\ weight\ (FW) = W_d * W_{nr}$$

i.e

$$Final\ weight\ (FW) = Design\ weight * Non-response\ weight$$

Finally, the estimation for observed values in the Gewogs has been obtained by multiplying each sample data with the final weight (FW) calculated for each Gewog.

Therefore, the estimate of a *total value* (such as total production) is the product of the final weight (FW) and the value (y_i), for each responding unit, summed over all responding units:

$$Y = \sum_{i=1}^{n} FW * Y_i$$

1.8 Reference period and field operations

The information collected in the 2019 AASS refers to the household's information for the year 2019. In the current survey, the *Computer-Assisted Personal Interviewing (CAPI)* method was employed to collect the data. Agriculture Extension Supervisors in 205 Gewogs enumerated the survey for a duration of one month from 15th February to 15th March 2020. However, due to COVID-19 pandemic the survey had to be extended by another two weeks.

1.9 Training of Gewog Agriculture Extension Supervisors

The RNR Statistics Division (RSD) trained all Gewog Agriculture Extension Supervisors (GAESs) on interviewing technique using the CAPI. The content of the questionnaire and any other issues regarding the operation of the survey was developed in consultation with the GAESs and the DoA. The two-day training was provided on how to administer a questionnaire with mock demonstrations followed by an hour field test. GAESs checked the adequacy of the questionnaire and rectified mistakes if any in the CAPI-based questionnaire.

1.10 Response rate

The problem of non-response is always expected in any survey. For 2019 AASS, the response rate was close to cent percent. The overall non-respone rate was very neglibile (about 0.4 percent) for 2019 AASS. Table 1.2 gives the response rate by different dzongkhag. In many dzongkhags, the response rate was cent percent or close to cent percent. The least response rate was observed in Paro Dzongkhag.

Table 1. 2 Response rate by Dzongkhag

Dzongkhag	Sample HHs	Enumerated HHs	Response Rate (%)
Bumthang	402	402	100.00
Chhukha	1,079	1,075	99.65
Dagana	1,328	1,328	100.00
Gasa	274	274	100.00
Haa	550	550	99.94
Lhuntse	738	737	99.80
Monggar	1,674	1,670	99.77
Paro	975	930	95.35
Pema Gatshel	1,059	1,058	99.94
Punakha	951	951	100.00
Samdrup Jongkhar	1,087	1,087	100.00
Samtse	1,775	1,768	99.58
Sarpang	1,267	1,266	99.93
Thimphu	516	513	99.33
Trashigang	1,624	1,624	100.00
Trashi Yangtse	803	792	98.69
Trongsa	487	487	100.00
Tsirang	1,199	1,199	100.00
Wangdue Phodrang	1,292	1,290	99.84
Zhemgang	750	750	100.00
TOTAL	**19,831**	**19,751**	**99.60**

1.11 Quality assurance

The quality of a survey data is of primary importance for accuracy, relevance, reliability and validity of results. The RSD team implemented measures to prevent unacceptable practices and to minimize errors in the data collection.

To ensure data quality, utmost attention was paid particularly, starting from the design of the questionnaire, giving briefing to Gewog Agriculture Extension Supervisors, data validation and cleaning to data tabulation, and finally on the report writing. Several stakeholder consultations and roundtable meetings through the RNR Statistics Technical Working Group (RS-TWG) and meeting with GAESs were carried out to discuss and review the content of the questionnaire before finalizing it.

Officials from RSD validated data collected by checking the distribution of the data for any outliers in multiple stages. The team from RSD was formed as focal by different crops and by dzongkhag so that data received were thoroughly cleaned and validated. In the first stage, yields for different crops were estimated based on the reported production and harvest area for cereal and horticultural crops.

Similarly, the yields for different fruits were generated based on the reported production and the number of bearing trees. The data distribution based on the yields, were then checked thoroughly using the inter-quartile range method. In the second stage of data validation, the units if found wrongly reported were also checked in close consultation with GAESs and where necessary, telephonic calls were made to the individual respondents.

Thus, a thorough data validation and cleaning was carried out to ensure and re-validate information collected from the farmers were genuine. Furthermore, the RSD team randomly called agriculture households that needed further data validation and where necessary GAESs were also contacted.

1.12 Data processing and analysis

Field data collected through CAPI software using the tablets were analysed using the STATA by the RSD. A tabulation plan was developed and a coreset of tables were produced in accordance with the tabulation plan. This was used as the basis for the presentation and analysis of results in the report.

Further, the analysis results and report tables that were produced by RSD team underwent several rounds of internal review and discussions. It was then presented for endorsement to the RS-TWG.

CHAPTER 2: CEREAL CROPS

Self-sufficiency in cereals are identified as the thrust area for the agriculture sector. For example, rice is the main staple food in the country and attaining the rice self-sufficiency has always been the top most priority in the agricultural policy agenda. This chapter presents the statistics on area and production of cereal crops in the country disaggregated by dzongkhags.

2.1. Cereal production by dzongkhag, and by type

Table 2.1 shows the total cereal production by type in 2019. According to the results of the 2019 Annual Agriculture Sample Survey (AASS), a total of about 102,220 MT of Cereals were produced. The commonly grown cereal crops in the country are paddy, maize, wheat, barley, buckwheat, millet, amaranthus and quinoa. Quinoa is the recently grown cereal crop in the country.

Table 2. 1 Total cereal production by type, 2019

Type	Sown Area	Harvest Area	Production
	(Acre)		(MT)
Paddy (irrigated)	31,574.01	29,786.23	49,622.92
Paddy (upland)	594.84	527.76	325.13
Maize	37,238.92	32,484.67	46,235.35
Wheat	2,691.38	2,481.46	1,318.54
Barley	2,061.62	1,956.70	1,026.28
Millet	2,925.38	2,686.03	1,240.45
Buckwheat	5,662.08	5,116.43	2,350.43
Amaranthus	65.54	63.98	18.46
Quinoa	365.26	308.16	82.62
TOTAL	**83,179.03**	**75,411.42**	**102,220.18**

The production figures of all cereal crops are as reported by the agricultural households except for paddy and maize. ***The production of paddy and maize are computed by multiplying the harvest area of the holding as reported in the survey with the crop cut yield of the respective gewogs (i.e. area harvested by the households [as reported based on the sown area minus the crop area lost] * crop cut yield of the gewog).*** Table 2.2 – 2.10 present different cereal production by type and by dzongkhag.

Figure 2.1 gives the distribution of irrigated paddy and maize production, by dzongkhag in 2019. Among cereal crops, paddy and maize are the major cereal crops in the country. A total of 49,623 MT of irrigated paddy and 46,235 MT of maize were produced in 2019.

Across the dzongkhag, Punakha (about 16 percent), Paro (about 13 percent) and Wangdue Phodrang (about 12 percent) recorded the highest production of irrigated paddy, while Monggar (about 17 percent), Trashigang (about 14 percent) and Samtse (about 10 percent) recorded for the highest production of maize.

Figure 2.2 presents the total paddy production by Punakha and Paro. In Punakha, Taedwang (about 18 percent), Kabisa (about 17 percent) and Dzomi (about 13 percent) gewogs account for the highest production. In Paro dzongkhag, Lamgong (about 27 percent), Wangchang (about 15 percent) and Dopshar-ri (about 13 percent) gewogs account for the highest production.

Figure 2.3 shows the total maize production by Monggar and Trashigang dzongkhags. In Monggar dzongkhag, Thang-Rong (about 13 percent), Jurmed (about 9 percent) and Chagsakhar (about 9 percent) gewogs account for the highest production. In Trashigang dzongkhag, Shongphu (about 14 percent), Udzorong (about 14 percent) and Kanglung (about 11 percent) gewogs account for the highest production.

Figure 2.4 provides the share of other cereal production by dzongkhags. Among the other cereals production viz. wheat, barley, millet and buckwheat, Bumthang (about 13 percent), Samdrup Jongkhar (about 10 percent) and Trongsa (about 9 percent) account for the highest

production. The size of the pie chart indicates the relative contribution to the total other cereal production by dzongkhags.

In terms of the individual cereal contribution to the total other cereal production, Thimphu, Paro and Punakha received majority contribution from wheat, while Gasa, Monggar and Trongsa received from barley. On the other hand, Lhuentse, Sarpang and Trashi Yangtse received more contribution from millet, while Samdrup Jongkhar, Trashigang and Zhemgang received more contribution from Buckwheat. The total other cereal production in 2019 was 6,037 MT including amaranthus and quinoa production.

Figure 2. 1 Share of irrigated paddy and maize produciton by dzongkhag, 2019

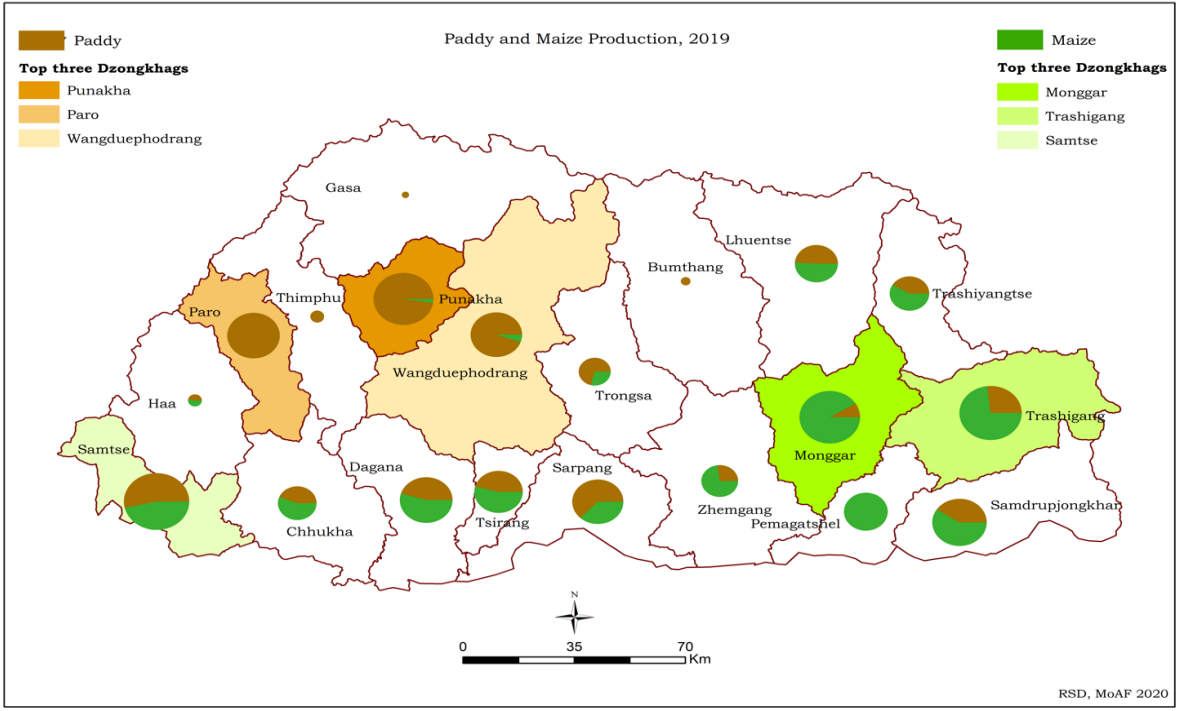
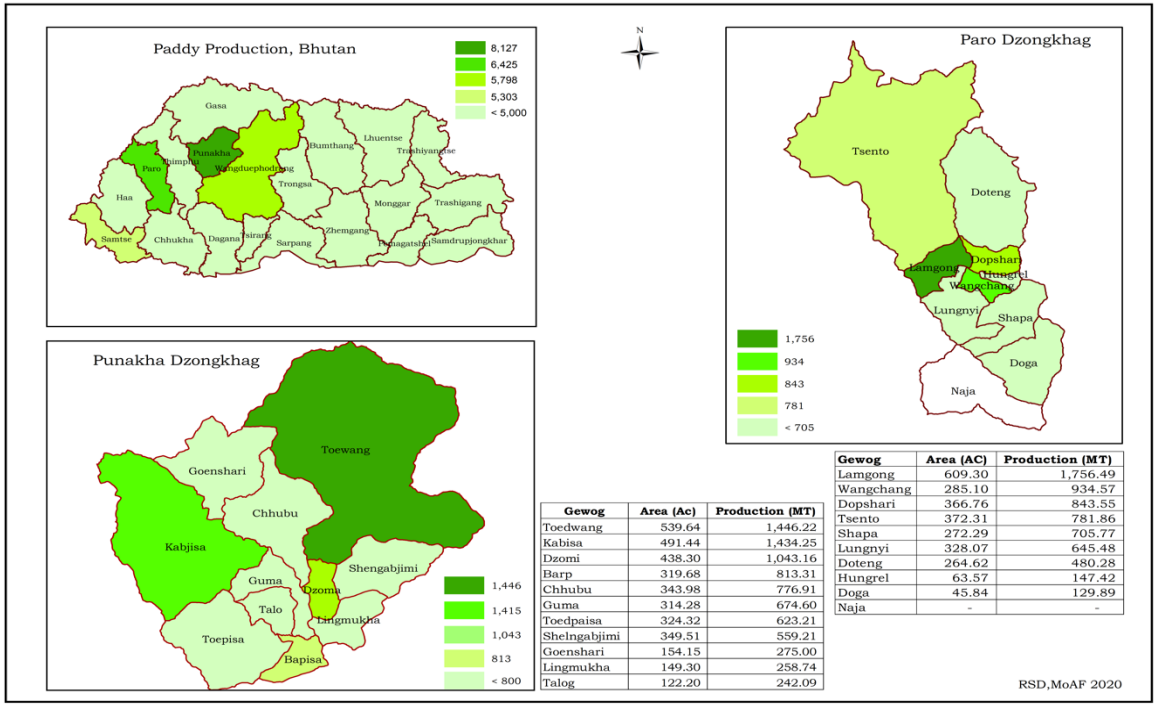


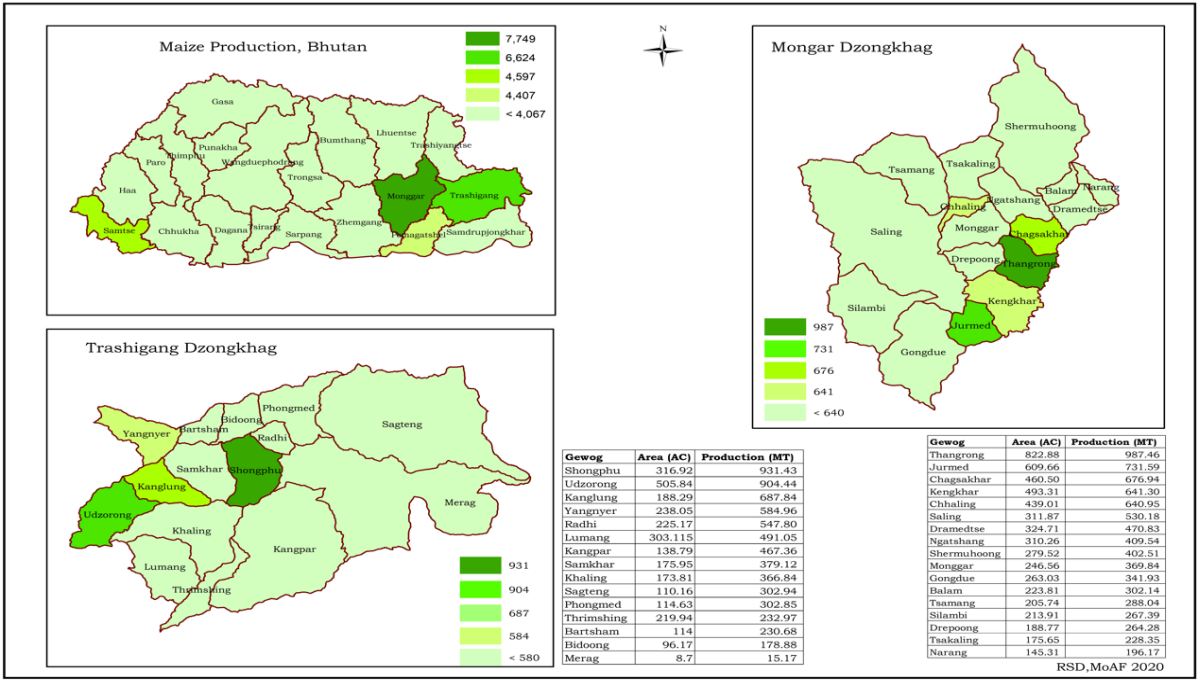
Figure 2. 2 Irrigated paddy production (MT) by Punakha and Paro dzongkhags



Gewog	Area (Ac)	Production (MT)
Toedwang	539.64	1,446.22
Kabisa	491.44	1,434.25
Dzomi	438.30	1,043.16
Barp	319.68	813.31
Chhubu	343.98	776.91
Guma	314.28	674.60
Toedpaisa	324.32	623.21
Shelngabjimi	349.51	559.21
Goenshari	154.15	275.00
Lingmukha	149.30	258.74
Talog	122.20	242.09

Gewog	Area (AC)	Production (MT)
Lamgong	609.30	1,756.49
Wangchang	285.10	934.57
Dopshari	366.76	843.55
Tsento	372.31	781.86
Shapa	272.29	705.77
Lungnyi	328.07	645.48
Doteng	264.62	480.28
Hungrel	63.57	147.42
Doga	45.84	129.89
Naja	-	-

Figure 2. 3 Maize production (MT) by Monggar and Trashigang dzongkhags, 2019



Gewog	Area (AC)	Production (MT)
Shongphu	316.92	931.43
Udzorong	505.84	904.44
Kanglung	188.29	687.84
Yangnyer	238.05	584.96
Radhi	225.17	547.80
Lumang	303.115	491.05
Kangpar	138.79	467.36
Samkhar	175.95	379.12
Khaling	173.81	366.84
Sagteng	110.16	302.94
Phongmed	114.63	302.85
Thrimshing	219.94	232.97
Bartsham	114	230.68
Bidoong	96.17	178.88
Merag	8.7	15.17

Gewog	Area (AC)	Production (MT)
Thangrong	822.88	987.46
Jurmed	609.66	731.59
Chagsakhar	460.50	676.94
Kengkhar	493.31	641.30
Chhaling	439.01	640.95
Saling	311.87	530.18
Dramedtse	324.71	470.83
Ngatshang	310.26	409.54
Shermuhoong	279.52	402.51
Monggar	246.56	369.84
Gongdue	263.03	341.93
Balam	223.81	302.14
Tsamang	205.74	288.04
Silambi	213.91	267.39
Drepoong	188.77	264.28
Tsakaling	175.65	228.35
Narang	145.31	196.17

Figure 2. 4 Share of other cereal production by dzongkhag, 2019

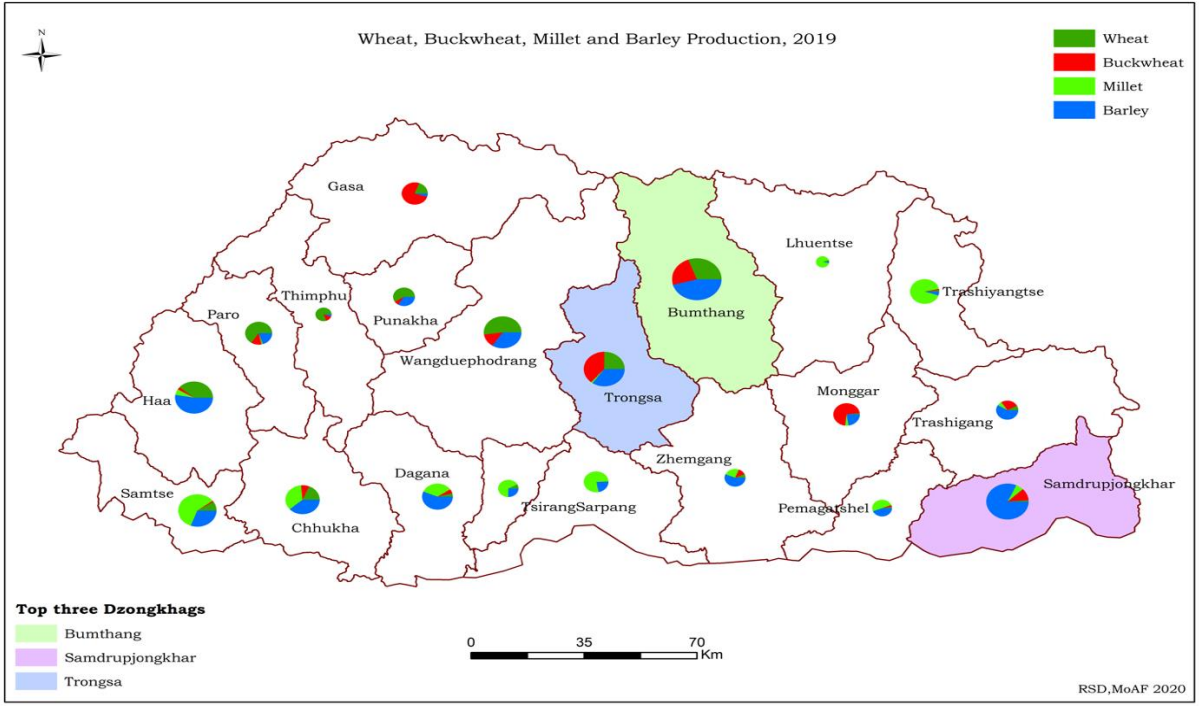


Table 2. 2 Irrigated paddy production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Irrigated paddy)		
Bumthang	136.25	134.01	209.75
Chhukha	1,189.22	1,082.30	1,532.58
Dagana	2,568.22	2,447.02	2,927.12
Gasa	71.38	70.74	119.63
Haa	124.21	112.44	187.63
Lhuntse	1,194.40	1,134.90	2,109.00
Monggar	648.70	602.78	753.53
Paro	2,622.15	2,607.86	6,425.29
Pema Gatshel	31.04	27.26	32.62
Punakha	3,711.23	3,546.79	8,146.73
Samdrup Jongkhar	1,795.43	1,728.04	2,799.89
Samtse	4,857.06	4,429.35	5,303.15
Sarpang	3,351.23	3,138.85	3,872.97
Thimphu	199.50	191.37	428.19
Trashigang	1,203.19	1,123.54	2,422.67
Trashi Yangtse	937.69	871.18	1,506.80
Trongsa	1,139.47	1,043.97	1,692.99
Tsirang	2,130.09	1,960.04	2,506.62
Wangdue Phodrang	2,905.56	2,825.35	5,798.52
Zhemgang	757.99	708.44	847.23
TOTAL	**31,574.01**	**29,786.23**	**49,622.92**

Table 2. 3 Upland paddy production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Upland paddy)		
Bumthang	-	-	-
Chhukha	3.21	2.69	0.88
Dagana	9.22	8.74	4.70
Gasa	-	-	-
Haa	-	-	-
Lhuntse	63.34	58.23	54.96
Monggar	30.87	23.71	6.94
Paro	0.15	0.15	0.12
Pema Gatshel	16.50	14.41	3.97
Punakha	9.56	9.56	15.50
Samdrup Jongkhar	25.08	22.14	12.00
Samtse	26.75	24.44	27.07
Sarpang	2.13	1.92	1.82
Thimphu	-	-	-
Trashigang	65.51	58.64	47.24
Trashi Yangtse	153.70	142.27	112.93
Trongsa	16.61	11.44	3.75
Tsirang	1.94	1.29	0.33
Wangdue Phodrang	19.02	16.46	5.88
Zhemgang	151.25	131.67	27.04
TOTAL	**594.84**	**527.76**	**325.13**

Table 2. 4 Maize production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Maize)		
Bumthang	-	-	-
Chhukha	1,890.58	1,576.68	1,949.77
Dagana	3,998.06	3,607.47	3,530.70
Gasa	6.83	6.54	3.78
Haa	250.63	203.25	233.24
Lhuntse	1,300.76	1,195.86	2,195.28
Monggar	6,296.33	5,714.50	7,749.43
Paro	18.95	17.54	12.08
Pema Gatshel	3,097.30	2,662.57	4,407.51
Punakha	156.57	146.01	202.70
Samdrup Jongkhar	3,113.69	2,951.12	4,067.90
Samtse	4,511.39	3,752.41	4,597.89
Sarpang	2,422.80	1,865.52	2,249.09
Thimphu	14.27	9.08	11.73
Trashigang	3,281.18	2,929.54	6,624.33
Trashi Yangtse	1,277.07	1,141.76	2,146.40
Trongsa	488.07	393.73	679.35
Tsirang	2,837.15	2,353.60	2,957.34
Wangdue Phodrang	218.22	192.78	333.28
Zhemgang	2,059.06	1,764.71	2,283.53
TOTAL	**37,238.92**	**32,484.67**	**46,235.35**

Table 2. 5 Wheat production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
		(Wheat)	
Bumthang	325.57	299.95	239.97
Chhukha	118.14	111.82	70.13
Dagana	36.22	35.33	12.63
Gasa	82.92	82.92	42.16
Haa	429.69	360.21	177.31
Lhuntse	7.69	7.46	2.99
Monggar	5.25	5.25	3.94
Paro	342.52	325.97	154.30
Pema Gatshel	10.84	9.51	3.64
Punakha	214.03	206.30	89.76
Samdrup Jongkhar	8.65	7.92	7.13
Samtse	116.73	100.75	41.85
Sarpang	6.76	5.34	2.13
Thimphu	132.99	99.89	65.46
Trashigang	19.66	17.38	12.40
Trashi Yangtse	8.25	7.89	4.73
Trongsa	253.64	246.08	132.94
Tsirang	18.00	17.05	10.49
Wangdue Phodrang	528.02	510.96	234.75
Zhemgang	25.81	23.48	9.83
TOTAL	**2,691.38**	**2,481.46**	**1,318.54**

Table 2. 6 Barley production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
		(Barley)	
Bumthang	287.29	253.86	185.33
Chhukha	63.12	62.58	28.67
Dagana	56.01	49.87	15.87
Gasa	199.53	199.53	165.84
Haa	34.18	31.16	12.97
Lhuntse	0.99	0.96	0.38
Monggar	593.80	570.50	160.44
Paro	58.04	56.73	30.87
Pema Gatshel	13.52	11.49	3.86
Punakha	24.56	24.49	10.24
Samdrup Jongkhar	86.24	85.34	61.53
Samtse	18.99	17.43	6.01
Sarpang	1.58	1.02	0.35
Thimphu	21.68	19.21	11.62
Trashigang	76.96	68.29	41.68
Trashi Yangtse	5.09	4.78	4.19
Trongsa	330.10	313.83	207.88
Tsirang	3.81	3.47	0.94
Wangdue Phodrang	155.83	151.86	61.01
Zhemgang	30.30	30.30	16.60
TOTAL	**2,061.62**	**1,956.70**	**1,026.28**

Table 2. 7 Millet production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Millet)		
Bumthang	-	-	-
Chhukha	394.87	369.99	131.72
Dagana	301.62	281.72	103.76
Gasa	-	-	-
Haa	50.95	49.45	26.78
Lhuntse	72.16	66.18	51.37
Monggar	37.12	34.92	8.81
Paro	5.02	5.02	3.47
Pema Gatshel	161.98	148.34	61.85
Punakha	1.48	1.48	0.65
Samdrup Jongkhar	82.42	79.67	34.64
Samtse	788.44	721.32	276.05
Sarpang	429.08	358.57	150.45
Thimphu	-	-	-
Trashigang	44.04	42.08	11.29
Trashi Yangtse	224.00	211.92	250.63
Trongsa	23.03	19.81	6.57
Tsirang	213.49	205.41	87.32
Wangdue Phodrang	2.58	2.58	1.17
Zhemgang	93.10	87.58	33.93
TOTAL	**2,925.38**	**2,686.03**	**1,240.45**

Table 2. 8 Buckwheat production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Buckwheat)		
Bumthang	640.52	525.85	357.59
Chhukha	462.63	404.79	144.64
Dagana	528.80	481.41	170.99
Gasa	19.06	19.06	10.60
Haa	574.85	511.29	242.71
Lhuntse	5.06	5.06	2.19
Monggar	195.56	184.85	50.85
Paro	118.51	115.80	46.76
Pema Gatshel	172.13	152.44	54.44
Punakha	101.83	99.77	52.25
Samdrup Jongkhar	696.98	679.78	469.01
Samtse	384.74	351.44	143.12
Sarpang	139.49	127.71	41.42
Thimphu	5.61	5.27	4.13
Trashigang	274.53	260.46	93.28
Trashi Yangtse	33.13	29.03	14.38
Trongsa	526.02	450.12	186.64
Tsirang	139.37	127.56	33.01
Wangdue Phodrang	466.77	424.52	154.31
Zhemgang	176.49	160.21	78.10
TOTAL	**5,662.08**	**5,116.43**	**2,350.43**

Table 2. 9 Amaranthus production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Amaranthus)		
Bumthang	-	-	-
Chhukha	2.66	2.66	0.93
Dagana	0.42	0.42	0.06
Gasa	-	-	-
Haa	-	-	-
Lhuntse	-	-	0.00
Monggar	2.03	2.02	0.89
Paro	-	-	-
Pema Gatshel	2.68	2.18	0.65
Punakha	3.53	3.53	0.51
Samdrup Jongkhar	7.21	7.21	6.18
Samtse	1.17	1.12	0.35
Sarpang	0.04	0.04	0.01
Thimphu	-	-	-
Trashigang	11.49	11.49	1.74
Trashi Yangtse	1.00	1.00	0.10
Trongsa	1.64	1.64	0.34
Tsirang	0.17	0.17	0.02
Wangdue Phodrang	8.72	8.52	2.46
Zhemgang	22.78	21.98	4.22
TOTAL	**65.54**	**63.98**	**18.46**

Table 2. 10 Quinoa production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Quinoa)		
Bumthang	1.09	1.09	0.23
Chhukha	36.25	26.46	6.68
Dagana	0.24	0.13	0.05
Gasa	-	-	-
Haa	2.28	2.28	0.14
Lhuntse	35.24	28.55	5.37
Monggar	66.74	58.51	17.04
Paro	-	-	-
Pema Gatshel	2.14	1.28	0.96
Punakha	-	-	-
Samdrup Jongkhar	55.98	51.75	14.10
Samtse	51.25	46.68	13.18
Sarpang	27.22	19.16	4.36
Thimphu	1.64	1.64	0.48
Trashigang	43.43	31.18	9.77
Trashi Yangtse	3.01	2.01	0.29
Trongsa	1.46	1.43	0.37
Tsirang	10.67	10.53	2.57
Wangdue Phodrang	24.68	23.54	6.81
Zhemgang	1.94	1.94	0.23
TOTAL	**365.26**	**308.16**	**82.62**

CHAPTER 3: OILSEEDS AND LEGUME

This chapter introduces different types of Oilseeds and legumes grown in the country. The chapter includes statistics on area and production of various oilseeds and legumes in the country disaggregated by dzongkhag.

3.1. Oilseeds and legumes production by dzongkhag, and by type

Table 3.1 shows the total Oilseeds and Legumes production by type in 2019. A total of about 2,482 MT of Oilseeds and Legumes were produced. The common oilseeds and legumes grown in the country are mustard, sunflower, sesame, groundnut, soyabeans, beans dry, chickpeas, cowpeas, lentil, rajmabeans and mungbeans. Table 3.2 – 3.12 present the detailed oilseeds and legume production by type and by dzongkhag.

Among the various oilseeds and legumes, rajmabeans, mungbeans, beans dry and mustard are the most commonly grown by the farmers in the country. From the total of 666 MT of rajmabeans produced, Mongar (about 36 percent), Samdrup Jongkhar (about 23 percent) and Dagana (abour 18 percent) dzongkhags account for the highest production. In terms of the mungbeans production, Dagana dzongkhag alone accounts for almost 52 percent of the total production. For mustard production, Samtse (about 20 percent) and Samdrup Jongkhar (about 18 percent) dzongkhags account for the highest production.

Table 3. 1 Total oilseeds and legume production by type, 2019

Type	Sown Area	Harvest Area	Production
	(Acre)		(MT)
Mustard	1,747.00	1,663.85	394.42
Sunflower	32.28	31.92	7.94
Sesame	3.77	3.77	0.57
Groundnut	408.82	377.82	229.58
Soya beans	661.07	621.15	171.16
Beans (dry)	982.99	929.08	407.42
Chickpeas	31.12	30.97	21.83
Cowpeas	67.37	66.24	64.42
Lentil	328.30	297.07	54.79
Rajmabeans	1,589.61	1,501.43	665.70
Mungbeans	1,384.30	1,307.48	464.07
TOTAL	**7,236.63**	**6,830.78**	**2,481.90**

Table 3. 2 Mustard production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Mustard)		
Bumthang	30.61	29.45	8.27
Chhukha	225.48	213.86	50.60
Dagana	210.8	200.68	46.43
Gasa	14.05	14.05	3.12
Haa	3.63	3.63	0.38
Lhuntse	26.13	24.5	5.82
Monggar	80.93	80.18	4.65
Paro	81.93	80.82	15.03
Pema Gatshel	22.94	19.06	3.32
Punakha	28.68	28.27	5.09
Samdrup Jongkhar	164.41	157.48	71.58
Samtse	387.75	366.01	80.76
Sarpang	165.23	157.27	29.16
Thimphu	8.16	8.16	2.63
Trashigang	46.56	44.11	13.05
Trashi Yangtse	1.89	1.24	0.23
Trongsa	29.2	27.84	7.06
Tsirang	71.75	68.29	15.68
Wangdue Phodrang	82.19	78.36	23.30
Zhemgang	64.68	60.59	8.26
TOTAL	**1,747.00**	**1,663.85**	**394.42**

Table 3. 3 Sunflower production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Sunflower)		
Bumthang	12.67	12.67	5.70
Chhukha	-	-	-
Dagana	0.56	0.56	0.10
Gasa	-	-	-
Haa	-	-	-
Lhuntse	13.68	13.35	0.35
Monggar	-	-	-
Paro	-	-	-
Pema Gatshel	-	-	-
Punakha	-	-	-
Samdrup Jongkhar	-	-	-
Samtse	3.11	3.08	0.46
Sarpang	-	-	-
Thimphu	-	-	-
Trashigang	2.26	2.26	1.33
Trashi Yangtse	-	-	-
Trongsa	-	-	-
Tsirang	-	-	-
Wangdue Phodrang	-	-	-
Zhemgang	-	-	-
TOTAL	**32.28**	**31.92**	**7.94**

Table 3. 4 Sesame production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Sesame)		
Bumthang	-	-	-
Chhukha	-	-	-
Dagana	3.10	3.10	0.43
Gasa	-	-	-
Haa	-	-	-
Lhuntse	-	-	-
Monggar	-	-	-
Paro	-	-	-
Pema Gatshel	0.31	0.31	0.05
Punakha	-	-	-
Samdrup Jongkhar	-	-	-
Samtse	-	-	-
Sarpang	0.36	0.36	0.09
Thimphu	-	-	-
Trashigang	-	-	-
Trashi Yangtse	-	-	-
Trongsa	-	-	-
Tsirang	-	-	-
Wangdue Phodrang	-	-	-
Zhemgang	-	-	-
TOTAL	**3.77**	**3.77**	**0.57**

Table 3. 5 Groundnut production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Groundnut)		
Bumthang	-	-	-
Chhukha	-	-	-
Dagana	17.39	17.04	3.32
Gasa	-	-	-
Haa	1.41	1.41	0.18
Lhuntse	2.06	2.06	-
Monggar	15.66	14.85	6.84
Paro	-	-	-
Pema Gatshel	104.98	93.54	47.19
Punakha	10.62	10.33	4.73
Samdrup Jongkhar	7.90	7.57	3.40
Samtse	0.24	0.21	0.02
Sarpang	2.14	1.76	0.04
Thimphu	-	-	-
Trashigang	148.83	143.01	112.36
Trashi Yangtse	80.35	72.84	45.01
Trongsa	0.02	0.02	0.03
Tsirang	6.14	5.23	2.42
Wangdue Phodrang	3.40	3.22	2.45
Zhemgang	7.68	4.73	1.60
TOTAL	**408.82**	**377.82**	**229.58**

Table 3. 6 Soyabean production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Soyabeans)		
Bumthang	-	-	-
Chhukha	30.20	28.93	4.23
Dagana	28.31	28.06	5.06
Gasa	-	-	-
Haa	0.68	0.68	0.15
Lhuntse	56.84	52.46	4.01
Monggar	43.64	41.63	10.15
Paro	2.91	2.85	4.31
Pema Gatshel	140.93	128.82	38.97
Punakha	0.70	0.70	0.59
Samdrup Jongkhar	51.14	49.73	20.77
Samtse	23.36	21.86	4.28
Sarpang	12.36	10.74	2.54
Thimphu	-	-	-
Trashigang	137.60	125.60	39.55
Trashi Yangtse	69.70	67.59	14.22
Trongsa	10.46	10.46	2.19
Tsirang	29.30	29.21	8.82
Wangdue Phodrang	6.59	6.25	7.25
Zhemgang	16.35	15.58	4.08
TOTAL	**661.07**	**621.15**	**171.16**

Table 3. 7 Beans dry production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Beans dry)		
Bumthang	-	-	-
Chhukha	33.68	32.91	15.87
Dagana	71.67	69.34	22.07
Gasa	0.68	0.68	1.28
Haa	5.73	5.70	1.91
Lhuntse	26.61	25.07	2.04
Monggar	192.69	183.87	60.45
Paro	48.44	48.27	76.79
Pema Gatshel	132.44	108.79	52.56
Punakha	1.79	1.67	0.31
Samdrup Jongkhar	64.10	62.75	49.60
Samtse	113.14	112.09	27.04
Sarpang	96.65	88.27	26.98
Thimphu	4.99	4.99	0.37
Trashigang	37.47	34.61	9.89
Trashi Yangtse	23.27	22.32	4.07
Trongsa	0.33	0.33	1.12
Tsirang	126.34	124.48	51.91
Wangdue Phodrang	2.60	2.57	3.11
Zhemgang	0.37	0.37	0.05
TOTAL	**982.99**	**929.08**	**407.42**

Table 3. 8 Chickpeas production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Chickpeas)		
Bumthang	-	-	-
Chhukha	-	-	-
Dagana	0.75	0.75	0.09
Gasa	-	-	-
Haa	-	-	-
Lhuntse	-	-	-
Monggar	21.86	21.73	19.52
Paro	-	-	-
Pema Gatshel	1.08	1.06	0.38
Punakha	-	-	-
Samdrup Jongkhar	1.25	1.25	0.12
Samtse	6.03	6.03	1.68
Sarpang	-	-	-
Thimphu	-	-	-
Trashigang	-	-	-
Trashi Yangtse	-	-	-
Trongsa	-	-	-
Tsirang	-	-	-
Wangdue Phodrang	-	-	-
Zhemgang	0.15	0.15	0.03
TOTAL	**31.12**	**30.97**	**21.83**

Table 3. 9 Cowpeas production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Cowpeas)		
Bumthang	-	-	-
Chhukha	-	-	-
Dagana	0.92	0.92	0.61
Gasa	-	-	-
Haa	0.18	0.18	0.21
Lhuntse	0.27	0.27	0.06
Monggar	55.29	54.65	59.93
Paro	1.43	1.43	0.10
Pema Gatshel	3.62	3.13	1.45
Punakha	-	-	-
Samdrup Jongkhar	0.38	0.38	0.07
Samtse	1.26	1.26	0.17
Sarpang	0.23	0.23	0.06
Thimphu	-	-	-
Trashigang	1.14	1.14	0.42
Trashi Yangtse	0.32	0.32	0.14
Trongsa	-	-	-
Tsirang	2.05	2.05	0.79
Wangdue Phodrang	-	-	-
Zhemgang	0.28	0.28	0.42
TOTAL	**67.37**	**66.24**	**64.42**

Table 3. 10 Lentil production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Lentil)		
Bumthang	-	-	-
Chhukha	51.75	47.52	6.05
Dagana	10.86	9.88	4.09
Gasa	-	-	-
Haa	13.28	8.85	0.04
Lhuntse	-	-	-
Monggar	0.14	0.14	0.03
Paro	0.51	0.51	0.20
Pema Gatshel	7.33	6.21	1.79
Punakha	-	-	-
Samdrup Jongkhar	52.15	51.90	14.17
Samtse	49.21	49.06	9.06
Sarpang	44.99	29.35	4.97
Thimphu	-	-	-
Trashigang	38.15	33.78	4.90
Trashi Yangtse	38.40	38.40	2.98
Trongsa	-	-	-
Tsirang	21.53	21.47	6.51
Wangdue Phodrang	-	-	-
Zhemgang	-	-	-
TOTAL	**328.30**	**297.07**	**54.79**

Table 3. 11 Rajmabeans production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Rajmabeans)		
Bumthang	-	-	-
Chhukha	22.40	21.88	4.85
Dagana	474.44	437.06	118.94
Gasa	-	-	-
Haa	0.68	0.68	1.42
Lhuntse	13.98	12.10	1.66
Monggar	408.07	396.21	239.81
Paro	6.74	6.74	3.36
Pema Gatshel	45.44	40.99	12.16
Punakha	0.26	0.26	0.27
Samdrup Jongkhar	187.78	180.40	152.18
Samtse	34.41	31.45	7.35
Sarpang	9.83	9.76	3.72
Thimphu	-	-	-
Trashigang	315.96	299.04	101.50
Trashi Yangtse	1.39	1.30	1.60
Trongsa	-	-	-
Tsirang	66.14	61.47	15.13
Wangdue Phodrang	0.63	0.63	1.67
Zhemgang	1.46	1.46	0.08
TOTAL	**1,589.61**	**1,501.43**	**665.70**

Table 3. 12 Mungbeans production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Mungbeans)		
Bumthang	-	-	-
Chhukha	116.08	109.87	18.77
Dagana	385.99	363.65	241.78
Gasa	-	-	-
Haa	0.18	0.18	0.40
Lhuntse	0.05	0.05	0.01
Monggar	40.32	38.46	17.61
Paro	-	-	-
Pema Gatshel	27.36	26.45	4.91
Punakha	-	-	-
Samdrup Jongkhar	140.77	134.49	36.23
Samtse	279.99	270.31	45.58
Sarpang	207.08	199.37	51.98
Thimphu	-	-	-
Trashigang	27.60	24.90	7.51
Trashi Yangtse	2.81	2.31	0.42
Trongsa	-	-	-
Tsirang	142.21	131.09	36.24
Wangdue Phodrang	1.76	1.60	0.34
Zhemgang	12.10	4.75	2.29
TOTAL	**1,384.30**	**1,307.48**	**464.07**

CHAPTER 4: VEGETABLES AND SPICES

A farmer grows more than one vegetable. 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.

4.1. Vegetable and spices production by dzonkghag, and by type

Table 4.1 shows the total vegetable and spices production by type in 2019. A total of about 47,080 MT of vegetables were produced. The major vegetables grown in the country are turnip, cabbage, cauliflower, and chilli.

Among the vegetables, the production of turnip was recorded the highest with 9,294 MT, of which, Wangdue Phodrang (about 62 percent) and Haa (about 11 percent) dzongkhags account for the highest production. Turnip is not consumed as prominent as that of other vegetables in the country. However, it is used as non-traditional crop for livestock as forage supplies in many dzongkhags.

A total of 8,475 MT of spices were produced. Among the spices, ginger is the major among others and the highest ginger production was recorded in Samdrup Jongkhar (about 37 percent), Chhukha (about 26 percent) and Samtse (about 17 percent). The production of different vegetables and spices by dzongkhag and by type are presented in Table 4.2 – 4.25.

Table 4. 1 Total vegetable and spices production by type, 2019

	Type	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Vegetables	Asparagus	264.26	264.19	79.06
	Broccoli	764.79	751.2	864.25
	Cabbage	1,791.00	1,736.57	6,068.93
	Cauliflower	874.5	850.84	1,445.57
	Chilli	3,717.59	3,523.50	7,673.69
	Dalle chilli	197.36	193.67	169.09
	Green leaves	1,269.38	1,262.12	2,039.66
	Onion bulb	244.42	140.73	154.9
	Spring/bunching onion	244.42	243.50	178.98
	Coriander	255.72	254.94	119.54
	Eggplant	199.49	196.99	300.28
	Okara	15.1	14.89	23.11
	Cucumber	250.13	247.17	2,691.23
	Tomato	151.55	148.05	232.66
	Pumpkins, squash & gourds	484.25	568.56	6,043.30
	Carrot	547.25	540.04	1,373.81
	Raddish	1,249.24	1,238.31	4,721.31
	Turnip	1,469.72	1,465.03	9,293.46
	Peas (green/fresh)	469.47	451.06	684.48
	Beans (green/fresh)	2,099.57	2,058.27	2,923.05
	TOTAL VEGETABLES	**16,559.21**	**16,149.63**	**47,080.36**
Spices	Ginger	2,448.54	2,386.42	6,209.18
	Turmeric	69.99	69.97	92.03
	Garlic	778.28	770.41	760.89
	Cardamom	16,415.06	15,614.77	1,413.20
	TOTAL SPICES	**19,711.87**	**18,841.57**	**8,475.30**

Figure 4.1 gives the distribution share of major vegetable (viz. cabbage, cauliflower, chilli, beans and broccoli) production in the country by dzongkag. A total of 18,976 MT of major vegetables were produced. The top three dzongkhags are Paro (about 23 percent), Wangdue Phodrang (about 10 percent) and Punakha (about 8 percent). In terms of the individual contribution to the total major vegetables, the production share of cabbage was more in Paro, Haa and Pema Gatshel, while for cauliflower, its contribution was more in Dagana, Tsirang and Thimphu. Similarly, the contribution of chilli to the total major vegetable production was in Lhuentse, Pema Gatshel and Bumthang. For beans, it was more in Zhemgang, Samtse and Sarpang, while for broccoli, the share was more in Dagana, Sarpang and Trongsa.

A total of 7,674 MT of chillies was produced and the highest production came from Paro (about 14 percent), Punakha (about 13 percent) and Wangdue Phodrang (about 13 percent).

Figure 4.2 presents chilli production by Paro and Wangdue Phodrang dzongkhags. In Paro, Nagya (about 19 percent), Dokar (about 15 percent) and Dopshar-ri (about 15 percent) gewogs account for the highest production. In Wangdue Phodrang dzongkhag, Khazhi (about 26 percent), Dangchhu (about 23 percent) and Athang (about 16 percent) gewogs account for the highest production of chilli.

In terms of dalle chillies, there was 169 MT of production, of which, majority production came from Tsirang (about 17 percent), Sarpang (about 12 percent) and Wangdue Phodrang (about 12 percent).

Figure 4. 1 Major vegetable production by dzongkhag, 2019

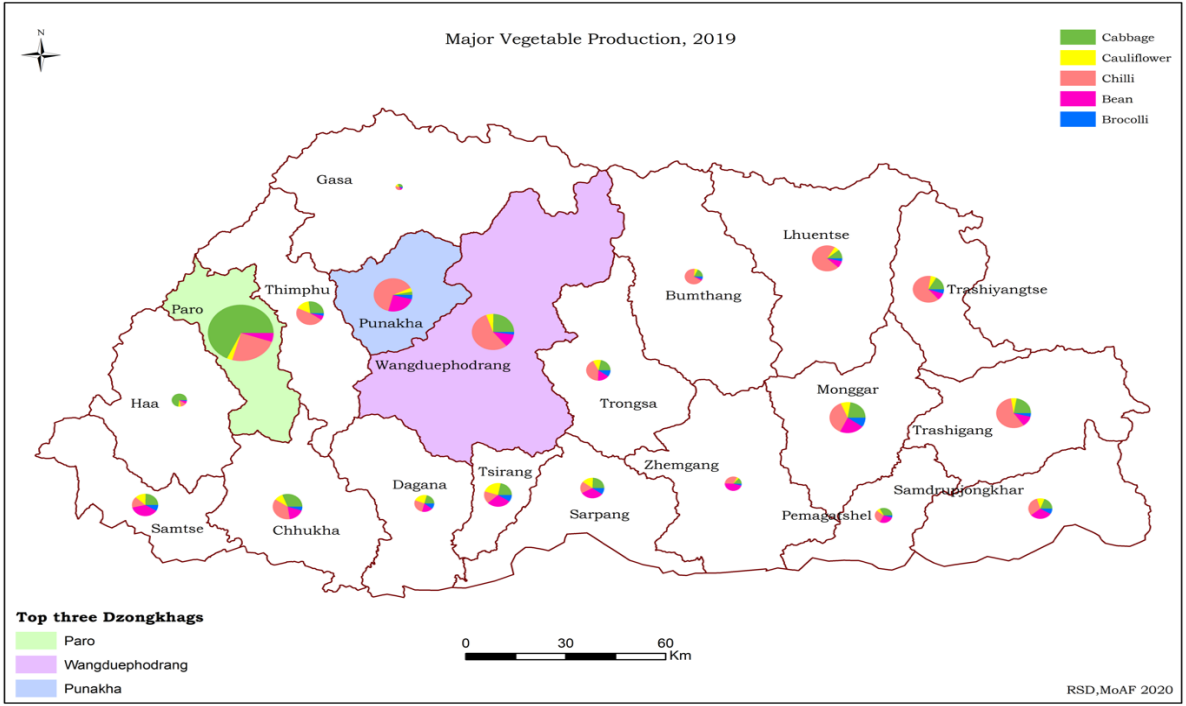
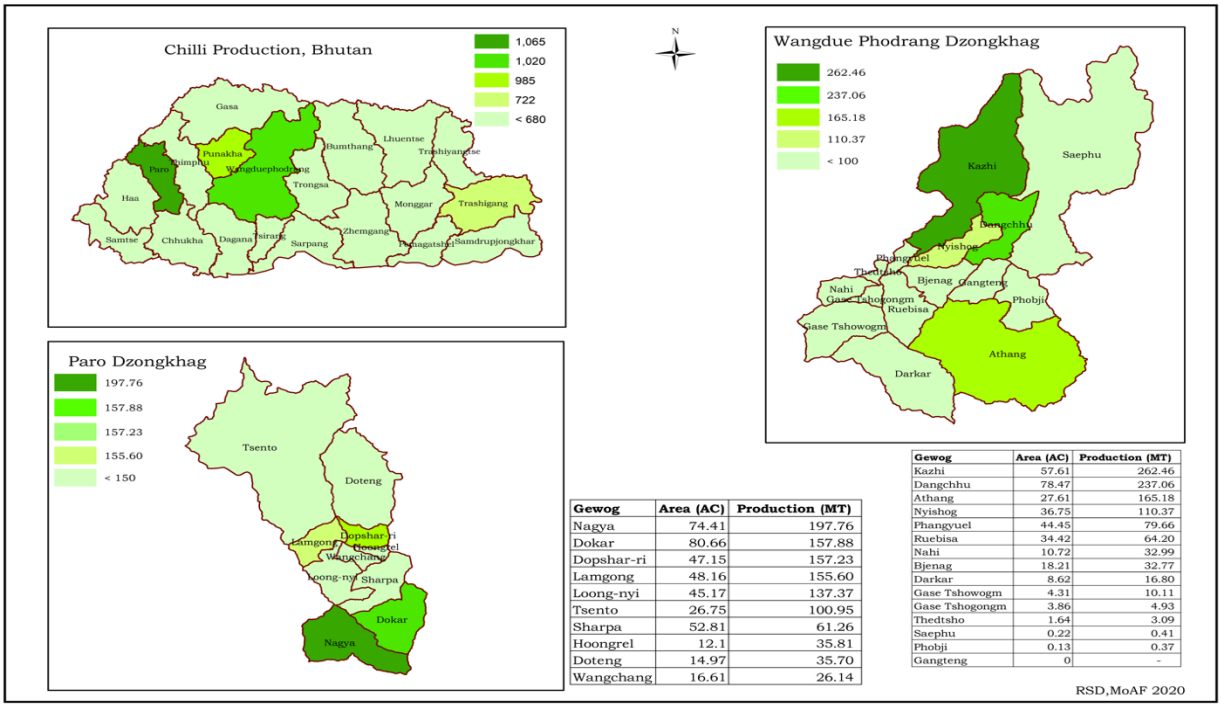


Figure 4. 2 Chilli production (MT) by Paro and Punakha dzongkhags, 2019



Gewog	Area (AC)	Production (MT)
Nagya	74.41	197.76
Dokar	80.66	157.88
Dopshar-ri	47.15	157.23
Lamgong	48.16	155.60
Loong-nyi	45.17	137.37
Tsento	26.75	100.95
Sharpa	52.81	61.26
Hoongrel	12.1	35.81
Doteng	14.97	35.70
Wangchang	16.61	26.14

Gewog	Area (AC)	Production (MT)
Kazhi	57.61	262.46
Dangchhu	78.47	237.06
Athang	27.61	165.18
Nyishog	36.75	110.37
Phangyuel	44.45	79.66
Ruebisa	34.42	64.20
Nahi	10.72	32.99
Bjenag	18.21	32.77
Darkar	8.62	16.80
Gase Tshowogm	4.31	10.11
Gase Tshogongm	3.86	4.93
Thedtsho	1.64	3.09
Saephu	0.22	0.41
Phobji	0.13	0.37
Gangteng	0	-

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Table 4. 2 Asparagus production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Asparagus)		
Bumthang	2.39	2.39	1.11
Chhukha	5.97	5.97	0.24
Dagana	1.08	1.08	0.19
Gasa	0.79	0.79	0.12
Haa	0.51	0.51	0.01
Lhuntse	9.00	9.00	0.55
Monggar	11.38	11.38	0.86
Paro	114.34	114.34	45.40
Pema Gatshel	16.04	16.04	0.86
Punakha	7.04	7.04	1.39
Samdrup Jongkhar	0.20	0.20	0.10
Samtse	4.99	4.99	0.04
Sarpang	3.81	3.76	0.26
Thimphu	19.53	19.53	8.46
Trashigang	14.75	14.75	5.53
Trashi Yangtse	17.21	17.21	1.68
Trongsa	17.17	17.17	7.37
Tsirang	8.95	8.95	2.62
Wangdue Phodrang	7.95	7.93	2.16
Zhemgang	1.16	1.16	0.12
TOTAL	**264.26**	**264.19**	**79.06**

Table 4. 3 Broccoli production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
		(Broccoli)	
Bumthang	10.07	10.07	18.38
Chhukha	71.65	70.90	45.08
Dagana	53.23	52.96	42.86
Gasa	3.76	3.72	3.78
Haa	2.77	2.77	5.78
Lhuntse	32.49	31.34	34.75
Monggar	100.96	96.50	132.85
Paro	17.08	17.05	15.74
Pema Gatshel	13.64	13.32	13.94
Punakha	49.07	48.37	64.78
Samdrup Jongkhar	27.89	27.89	51.00
Samtse	57.72	57.65	60.92
Sarpang	56.94	55.52	59.95
Thimphu	34.92	34.24	26.68
Trashigang	50.15	49.39	49.54
Trashi Yangtse	49.64	48.49	51.03
Trongsa	33.23	32.81	60.20
Tsirang	55.96	55.27	72.76
Wangdue Phodrang	34.10	33.48	42.20
Zhemgang	9.52	9.46	12.01
TOTAL	**764.79**	**751.20**	**864.25**

Table 4. 4 Cabbage production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Cabbage)		
Bumthang	19.94	19.92	61.78
Chhukha	91.15	88.15	278.63
Dagana	62.54	62.00	84.62
Gasa	11.14	11.14	17.65
Haa	56.46	52.06	173.72
Lhuntse	42.29	40.34	106.11
Monggar	151.01	147.71	303.09
Paro	456.92	430.12	3,007.66
Pema Gatshel	67.21	64.64	102.93
Punakha	18.71	18.60	48.92
Samdrup Jongkhar	60.57	59.48	113.70
Samtse	96.43	95.94	172.36
Sarpang	93.73	92.66	143.07
Thimphu	46.57	45.33	207.69
Trashigang	156.30	154.16	280.31
Trashi Yangtse	101.61	100.31	167.09
Trongsa	44.17	43.09	131.84
Tsirang	100.64	99.33	173.96
Wangdue Phodrang	83.31	82.33	453.82
Zhemgang	30.30	29.26	39.99
TOTAL	**1,791.00**	**1,736.57**	**6,068.93**

Table 4. 5 Cauliflower production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Cauliflower)		
Bumthang	6.78	6.77	19.07
Chhukha	72.57	71.38	86.36
Dagana	72.14	68.27	93.38
Gasa	6.49	6.49	7.63
Haa	6.65	6.55	13.13
Lhuntse	22.50	21.21	52.56
Monggar	90.61	87.19	117.80
Paro	38.83	37.18	118.25
Pema Gatshel	25.83	24.32	21.19
Punakha	27.27	26.76	59.80
Samdrup Jongkhar	43.48	42.74	61.12
Samtse	74.69	74.06	95.16
Sarpang	66.63	64.58	89.66
Thimphu	43.89	42.32	125.19
Trashigang	37.79	36.54	65.06
Trashi Yangtse	46.57	45.34	59.50
Trongsa	29.67	29.22	65.62
Tsirang	107.38	106.36	182.86
Wangdue Phodrang	34.04	33.63	100.76
Zhemgang	20.69	19.93	11.46
TOTAL	**874.50**	**850.84**	**1,445.57**

Table 4. 6 Chilli production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
		(Chilli)	
Bumthang	50.55	50.32	231.77
Chhukha	184.04	177.05	333.17
Dagana	126.28	120.42	110.47
Gasa	10.52	10.20	19.51
Haa	15.65	15.47	28.53
Lhuntse	247.79	223.67	680.72
Monggar	420.18	382.64	496.49
Paro	441.55	418.79	1,065.69
Pema Gatshel	133.35	125.59	90.51
Punakha	288.79	284.60	985.59
Samdrup Jongkhar	125.74	125.05	186.97
Samtse	105.71	103.12	111.49
Sarpang	118.78	112.70	109.57
Thimphu	117.05	111.23	366.13
Trashigang	397.22	385.70	722.55
Trashi Yangtse	294.89	275.10	635.34
Trongsa	124.04	120.79	256.24
Tsirang	107.49	105.61	131.63
Wangdue Phodrang	351.08	327.02	1,020.41
Zhemgang	56.89	48.43	90.93
TOTAL	**3,717.59**	**3,523.50**	**7,673.69**

Table 4. 7 Dalle chilli production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Dalle Chilli)		
Bumthang	-	-	-
Chhukha	17.59	17.46	14.68
Dagana	12.21	12.16	13.13
Gasa	0.07	0.07	0.20
Haa	2.06	2.06	6.36
Lhuntse	2.28	2.07	0.68
Monggar	23.53	21.66	15.23
Paro	-	-	-
Pema Gatshel	2.49	2.46	2.30
Punakha	1.94	1.92	2.09
Samdrup Jongkhar	7.78	7.78	5.10
Samtse	20.73	20.54	17.93
Sarpang	21.52	20.81	20.35
Thimphu	-	-	-
Trashigang	14.68	14.68	12.19
Trashi Yangtse	9.67	9.67	2.61
Trongsa	1.96	1.96	2.43
Tsirang	44.33	44.12	28.06
Wangdue Phodrang	10.79	10.52	20.11
Zhemgang	3.73	3.73	5.65
TOTAL	**197.36**	**193.67**	**169.09**

Table 4. 8 Green leaves production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Green leaves)		
Bumthang	4.80	4.80	21.69
Chhukha	116.84	115.82	241.02
Dagana	68.23	67.64	103.15
Gasa	10.32	10.32	6.84
Haa	16.48	16.37	25.92
Lhuntse	37.13	36.71	88.80
Monggar	124.48	123.23	75.56
Paro	22.25	22.15	23.77
Pema Gatshel	64.05	63.61	108.49
Punakha	63.93	63.33	72.79
Samdrup Jongkhar	72.07	71.91	87.28
Samtse	158.36	157.96	279.33
Sarpang	77.83	77.71	109.44
Thimphu	32.86	32.85	66.32
Trashigang	124.41	124.09	157.66
Trashi Yangtse	48.36	48.28	80.48
Trongsa	40.27	39.96	67.44
Tsirang	96.93	96.40	163.41
Wangdue Phodrang	66.26	66.13	221.14
Zhemgang	23.52	22.85	39.11
TOTAL	**1,269.38**	**1,262.12**	**2,039.66**

Table 4. 9 Onion bulb production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Onion bulb)		
Bumthang	0.04	-	-
Chhukha	2.73	3.47	3.11
Dagana	14.26	17.54	16.00
Gasa	3.46	0.03	0.02
Haa	0.52	0.10	0.10
Lhuntse	10.75	6.76	13.47
Monggar	34.51	22.14	23.47
Paro	1.75	0.92	1.10
Pema Gatshel	3.68	12.49	15.37
Punakha	46.54	2.12	1.61
Samdrup Jongkhar	9.15	6.75	7.49
Samtse	11.80	8.02	6.18
Sarpang	10.86	9.94	11.93
Thimphu	4.83	0.35	0.48
Trashigang	22.80	27.21	19.37
Trashi Yangtse	9.30	10.73	11.97
Trongsa	16.70	0.69	2.30
Tsirang	9.11	7.78	10.29
Wangdue Phodrang	30.16	3.50	10.36
Zhemgang	1.47	0.19	0.27
TOTAL	**244.42**	**140.73**	**154.90**

Table 4. 10 Bunching onion production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Bunching Onion)		
Bumthang	0.04	0.04	0.44
Chhukha	2.73	2.72	1.57
Dagana	14.26	14.04	6.44
Gasa	3.46	3.46	0.89
Haa	0.52	0.52	0.34
Lhuntse	10.75	10.75	3.09
Monggar	34.51	34.21	11.35
Paro	1.75	1.75	1.11
Pema Gatshel	3.68	3.68	2.15
Punakha	46.54	46.50	36.49
Samdrup Jongkhar	9.15	9.15	5.28
Samtse	11.80	11.65	11.46
Sarpang	10.86	10.86	15.01
Thimphu	4.83	4.83	9.14
Trashigang	22.80	22.80	12.74
Trashi Yangtse	9.30	9.26	2.05
Trongsa	16.70	16.63	7.99
Tsirang	9.11	9.11	5.95
Wangdue Phodrang	30.16	30.09	45.11
Zhemgang	1.47	1.45	0.38
TOTAL	**244.42**	**243.50**	**178.98**

Table 4. 11 Coriander production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
		(Coriander)	
Bumthang	1.66	1.66	2.74
Chhukha	8.78	8.77	3.95
Dagana	11.12	11.12	3.47
Gasa	2.74	2.74	0.37
Haa	2.16	2.16	0.85
Lhuntse	10.27	10.14	2.12
Monggar	23.87	23.87	5.04
Paro	4.29	4.28	1.92
Pema Gatshel	9.07	9.06	4.72
Punakha	29.62	29.60	13.10
Samdrup Jongkhar	6.85	6.85	1.74
Samtse	14.98	14.98	5.09
Sarpang	11.58	11.58	6.38
Thimphu	12.54	12.50	10.85
Trashigang	26.08	26.08	6.41
Trashi Yangtse	25.27	24.80	8.45
Trongsa	15.20	15.19	10.62
Tsirang	7.23	7.23	5.05
Wangdue Phodrang	26.45	26.37	25.93
Zhemgang	5.96	5.96	0.74
TOTAL	**255.72**	**254.94**	**119.54**

Table 4. 12 Eggplant production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Eggplant)		
Bumthang	-	-	0.09
Chhukha	7.10	7.04	7.93
Dagana	7.14	6.95	6.05
Gasa	0.33	0.33	1.11
Haa	3.57	3.57	2.05
Lhuntse	27.64	26.91	38.52
Monggar	9.00	8.96	6.81
Paro	6.93	6.93	19.48
Pema Gatshel	2.75	2.55	4.39
Punakha	18.18	17.88	62.32
Samdrup Jongkhar	9.99	9.81	8.71
Samtse	30.93	30.60	17.00
Sarpang	11.21	11.17	23.49
Thimphu	1.06	1.06	1.24
Trashigang	11.03	10.98	12.03
Trashi Yangtse	22.27	22.13	31.69
Trongsa	4.76	4.73	13.05
Tsirang	6.31	6.31	7.01
Wangdue Phodrang	12.54	12.33	31.18
Zhemgang	6.75	6.75	6.14
TOTAL	**199.49**	**196.99**	**300.28**

Table 4. 13 Okara production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
		(Okara)	
Bumthang	-	-	-
Chhukha	1.16	1.16	1.57
Dagana	0.54	0.46	0.72
Gasa	-	-	-
Haa	0.03	0.03	0.04
Lhuntse	-	-	-
Monggar	0.12	0.12	0.09
Paro	-	-	-
Pema Gatshel	0.70	0.68	0.75
Punakha	0.23	0.23	0.53
Samdrup Jongkhar	0.29	0.29	0.32
Samtse	2.01	1.96	3.37
Sarpang	7.75	7.70	13.23
Thimphu	-	-	-
Trashigang	-	-	-
Trashi Yangtse	-	-	-
Trongsa	-	-	-
Tsirang	1.20	1.20	0.90
Wangdue Phodrang	1.07	1.06	1.59
Zhemgang	-	-	-
TOTAL	**15.10**	**14.89**	**23.11**

Table 4. 14 Cucumber production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
		(Cucumber)	
Bumthang	-	-	6.51
Chhukha	11.93	11.85	107.82
Dagana	14.36	14.11	101.45
Gasa	-	-	6.13
Haa	5.57	4.97	42.15
Lhuntse	2.14	2.14	106.88
Monggar	28.70	27.98	93.21
Paro	8.73	8.73	36.01
Pema Gatshel	8.18	8.14	102.91
Punakha	54.45	53.52	379.26
Samdrup Jongkhar	2.54	2.54	123.59
Samtse	17.54	17.35	98.92
Sarpang	14.97	14.91	233.39
Thimphu	1.17	1.17	19.44
Trashigang	14.52	14.52	169.16
Trashi Yangtse	41.29	41.29	160.95
Trongsa	0.52	0.52	67.76
Tsirang	11.59	11.54	239.11
Wangdue Phodrang	10.99	10.95	225.27
Zhemgang	0.94	0.94	371.30
TOTAL	**250.13**	**247.17**	**2,691.23**

Table 4. 15 Tomato production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Tomato)		
Bumthang	1.20	1.20	3.98
Chhukha	8.67	7.64	9.72
Dagana	10.84	10.67	10.74
Gasa	0.20	0.20	0.21
Haa	1.83	1.83	23.76
Lhuntse	3.37	3.22	4.45
Monggar	7.67	7.48	5.90
Paro	6.28	5.89	11.75
Pema Gatshel	3.71	3.61	2.93
Punakha	9.81	9.80	14.91
Samdrup Jongkhar	6.71	6.71	10.24
Samtse	28.47	28.12	29.51
Sarpang	21.47	21.22	42.90
Thimphu	2.47	2.47	6.70
Trashigang	4.94	4.84	5.80
Trashi Yangtse	10.86	10.77	5.52
Trongsa	1.83	1.83	4.84
Tsirang	12.06	11.86	20.19
Wangdue Phodrang	7.32	6.85	17.08
Zhemgang	1.84	1.84	1.52
TOTAL	**151.55**	**148.05**	**232.66**

Table 4. 16 Pumpkins, squash & gourds production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Production (MT)
	(Pumpkins, squash & gourds)	
Bumthang	-	21.74
Chhukha	37.86	733.34
Dagana	46.12	421.44
Gasa	0.02	7.50
Haa	7.62	91.60
Lhuntse	0.09	93.75
Monggar	55.85	165.34
Paro	3.42	25.27
Pema Gatshel	41.97	434.27
Punakha	30.79	140.49
Samdrup Jongkhar	9.29	305.78
Samtse	108.95	1,095.97
Sarpang	93.03	523.30
Thimphu	1.69	6.94
Trashigang	22.60	217.28
Trashi Yangtse	16.44	329.23
Trongsa	1.64	163.34
Tsirang	64.12	806.56
Wangdue Phodrang	24.81	325.53
Zhemgang	2.25	134.64
TOTAL	**568.56**	**6,043.30**

Table 4. 17 Carrot production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Carrot)		
Bumthang	2.04	2.04	10.60
Chhukha	86.87	85.54	130.48
Dagana	4.10	3.92	3.55
Gasa	4.48	4.48	13.47
Haa	122.50	121.74	539.85
Lhuntse	6.46	6.18	8.69
Monggar	20.67	20.55	19.60
Paro	91.53	88.87	350.70
Pema Gatshel	3.90	3.74	3.93
Punakha	3.82	3.76	6.44
Samdrup Jongkhar	21.53	21.39	8.93
Samtse	20.21	20.20	6.14
Sarpang	34.18	34.07	16.50
Thimphu	30.98	30.86	121.21
Trashigang	10.36	10.20	16.19
Trashi Yangtse	47.25	46.54	16.53
Trongsa	12.23	11.92	28.03
Tsirang	6.15	6.15	8.51
Wangdue Phodrang	14.63	14.54	63.35
Zhemgang	3.36	3.35	1.11
TOTAL	**547.25**	**540.04**	**1,373.81**

Table 4. 18 Raddish production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
		(Raddish)	
Bumthang	10.96	10.96	79.94
Chhukha	49.23	49.14	140.36
Dagana	50.33	49.97	76.27
Gasa	12.40	12.40	22.35
Haa	21.29	20.94	86.77
Lhuntse	36.94	36.48	101.80
Monggar	140.90	140.17	367.31
Paro	51.33	49.13	261.82
Pema Gatshel	91.93	89.96	271.55
Punakha	31.21	30.75	155.14
Samdrup Jongkhar	68.81	68.79	202.38
Samtse	77.46	76.97	126.55
Sarpang	43.79	43.59	122.17
Thimphu	56.89	56.54	447.22
Trashigang	108.24	106.82	387.74
Trashi Yangtse	52.01	51.94	127.16
Trongsa	88.94	88.39	437.74
Tsirang	60.36	60.11	132.45
Wangdue Phodrang	170.10	169.38	1,033.19
Zhemgang	26.12	25.88	141.38
TOTAL	**1,249.24**	**1,238.31**	**4,721.31**

Table 4. 19 Turnip production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
		(Turnip)	
Bumthang	79.02	78.38	773.19
Chhukha	53.81	53.79	372.17
Dagana	8.88	8.88	7.80
Gasa	7.17	7.17	23.33
Haa	155.54	154.21	987.02
Lhuntse	5.37	5.37	10.18
Monggar	2.10	2.10	4.97
Paro	114.81	113.83	594.84
Pema Gatshel	2.72	2.59	27.19
Punakha	5.32	5.32	16.84
Samdrup Jongkhar	0.13	0.13	0.30
Samtse	0.95	0.95	0.98
Sarpang	0.18	0.18	0.52
Thimphu	72.70	72.48	370.08
Trashigang	5.39	5.30	16.58
Trashi Yangtse	6.41	5.91	9.58
Trongsa	45.23	45.05	280.41
Tsirang	1.93	1.78	4.57
Wangdue Phodrang	896.99	896.76	5,771.21
Zhemgang	5.07	4.85	21.68
TOTAL	**1,469.72**	**1,465.03**	**9,293.46**

Table 4. 20 Peas production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
		(Peas)	
Bumthang	1.21	1.21	4.98
Chhukha	22.49	21.81	26.53
Dagana	9.55	9.18	5.82
Gasa	0.43	0.43	1.15
Haa	13.44	13.43	26.84
Lhuntse	6.71	6.53	10.12
Monggar	54.99	45.27	22.09
Paro	113.47	112.06	221.20
Pema Gatshel	15.00	14.09	10.54
Punakha	58.73	57.36	93.19
Samdrup Jongkhar	27.56	27.02	47.80
Samtse	15.16	14.96	18.22
Sarpang	15.13	15.01	18.04
Thimphu	17.45	17.44	52.67
Trashigang	27.75	25.59	39.34
Trashi Yangtse	19.02	18.86	12.70
Trongsa	12.29	12.07	26.75
Tsirang	22.32	22.26	27.53
Wangdue Phodrang	15.11	14.89	18.31
Zhemgang	1.66	1.59	0.66
TOTAL	**469.47**	**451.06**	**684.48**

Table 4. 21 Beans production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Beans)		
Bumthang	1.82	1.81	12.90
Chhukha	151.19	148.98	160.13
Dagana	136.46	135.38	73.12
Gasa	2.09	1.80	6.97
Haa	6.71	6.15	16.38
Lhuntse	71.74	70.71	79.96
Monggar	180.73	176.74	297.08
Paro	121.67	121.40	228.29
Pema Gatshel	113.54	106.74	88.61
Punakha	179.64	173.32	379.19
Samdrup Jongkhar	127.76	126.58	178.42
Samtse	266.66	265.26	265.32
Sarpang	138.58	134.65	186.19
Thimphu	23.86	23.86	47.86
Trashigang	92.40	88.54	141.42
Trashi Yangtse	79.86	78.90	85.07
Trongsa	35.40	34.44	95.91
Tsirang	195.93	193.30	228.55
Wangdue Phodrang	106.46	102.76	217.03
Zhemgang	67.07	66.95	134.66
TOTAL	**2,099.57**	**2,058.27**	**2,923.05**

Table 4. 22 Ginger production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Ginger)		
Bumthang	-	-	-
Chhukha	563.49	547.02	1,599.23
Dagana	61.59	60.65	83.10
Gasa	0.05	0.05	0.11
Haa	2.09	2.03	2.86
Lhuntse	5.59	5.37	5.95
Monggar	42.19	41.10	32.91
Paro	-	-	-
Pema Gatshel	153.57	148.88	294.58
Punakha	1.31	1.31	1.67
Samdrup Jongkhar	734.31	732.76	2,310.77
Samtse	508.95	480.86	1,059.71
Sarpang	138.52	130.75	257.52
Thimphu	0.02	0.02	0.00
Trashigang	22.51	22.51	57.95
Trashi Yangtse	13.23	12.86	8.40
Trongsa	7.17	7.17	9.73
Tsirang	117.26	117.20	277.39
Wangdue Phodrang	4.91	4.86	7.63
Zhemgang	71.78	71.02	199.67
TOTAL	**2,448.54**	**2,386.42**	**6,209.18**

Table 4. 23 Turmeric production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Turmeric)		
Bumthang	-	-	-
Chhukha	3.33	3.33	4.99
Dagana	0.60	0.60	0.52
Gasa	-	-	-
Haa	1.97	1.97	4.31
Lhuntse	0.55	0.55	0.61
Monggar	3.71	3.71	1.37
Paro	-	-	-
Pema Gatshel	17.64	17.62	28.44
Punakha	-	-	-
Samdrup Jongkhar	4.78	4.78	5.55
Samtse	14.93	14.93	28.19
Sarpang	6.56	6.56	6.16
Thimphu	-	-	-
Trashigang	1.32	1.32	1.85
Trashi Yangtse	1.12	1.12	0.52
Trongsa	-	-	-
Tsirang	8.24	8.24	4.13
Wangdue Phodrang	0.09	0.09	0.12
Zhemgang	5.15	5.15	5.27
TOTAL	**69.99**	**69.97**	**92.03**

Table 4. 24 Garlic production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Garlic)		
Bumthang	12.20	12.20	22.50
Chhukha	6.00	6.00	3.54
Dagana	15.95	15.95	10.82
Gasa	19.85	19.85	35.64
Haa	5.19	5.19	3.68
Lhuntse	62.61	62.05	91.07
Monggar	118.99	117.88	65.21
Paro	4.74	4.74	5.73
Pema Gatshel	81.88	80.93	31.23
Punakha	17.18	17.12	16.10
Samdrup Jongkhar	40.85	40.23	35.55
Samtse	10.13	10.05	7.35
Sarpang	9.18	9.18	6.55
Thimphu	4.46	4.46	5.14
Trashigang	172.34	170.49	212.61
Trashi Yangtse	67.40	66.57	41.59
Trongsa	16.03	16.03	19.34
Tsirang	39.45	39.34	19.90
Wangdue Phodrang	66.23	64.53	121.24
Zhemgang	7.62	7.62	6.11
TOTAL	**778.28**	**770.41**	**760.89**

Table 4. 25 Cardamom production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
		(Cardamom)	
Bumthang	-	-	-
Chhukha	3,629.65	3,549.77	250.14
Dagana	2,080.67	2,022.78	171.11
Gasa	0.41	0.41	0.04
Haa	637.81	637.28	58.58
Lhuntse	53.22	53.22	3.31
Monggar	173.75	171.99	16.76
Paro	-	-	-
Pema Gatshel	547.71	533.67	44.15
Punakha	27.75	26.39	1.90
Samdrup Jongkhar	450.44	444.85	45.60
Samtse	4,337.61	3,953.63	336.95
Sarpang	1,500.28	1,383.71	188.67
Thimphu	-	-	-
Trashigang	146.26	145.77	17.50
Trashi Yangtse	33.74	33.40	1.38
Trongsa	327.82	255.96	49.24
Tsirang	1,859.12	1,817.57	185.42
Wangdue Phodrang	28.79	27.96	1.89
Zhemgang	580.02	556.40	40.58
TOTAL	**16,415.06**	**15,614.77**	**1,413.20**

CHAPTER 5: MUSHROOM

5.1. Mushroom production by dzongkhag, and by type

Growing of mushroom has recently picked up among the farming communities. In 2019, there were about 993 mushroom growers in the country.

Table 5.1 shows the total mushroom growers and production by type in 2019. A total of 44 MT of mushroom were produced in the country. Across the dzongkhag, Thimphu (about 16 percent), Trashigang (about 12 percent) and Paro (about 12 percent) are the top three mushroom growing dzongkhags in the country. Among the various mushroom, the most commonly grown are shitake, oyster and button mushroom.

A total of 26 MT of shitake, 18 MT of oyster and 0.02 MT of button mushroom were produced. Thimphu (about 26 percent) and Trashigang (about 20 percent) dzongkhags account for most of the shitake mushroom production in the country, while Sarpang (about 27 percent) and Paro (about 15 percent) account for most of the oyster production. Pema Gatshel was the only dzongkhag that grew button mushroom in 2019.

Table 5. 1 Mushroom production, by dzongkhag, and by type, 2019

Dzongkhag	Total grower	Production (MT)			
		Shitake	Oyester	Button	Total
Bumthang	139	-	1.10	-	1.10
Chhukha	19	0.55	0.37	-	0.93
Dagana	23	-	0.68	-	0.68
Gasa	16	0.96	-	-	0.96
Haa	3	0.18	-	-	0.18
Lhuntse	8	0.34	0.04	-	0.38
Monggar	98	1.40	0.17	-	1.57
Paro	151	2.36	2.78	-	5.14
Pema Gatshel	55	3.15	0.02	0.02	3.19
Punakha	15	0.70	1.25	-	1.96
Samdrup Jongkhar	6	0.12	0.39	-	0.51
Samtse	20	-	2.19	-	2.19
Sarpang	68	-	4.86	-	4.86
Thimphu	53	6.69	0.28	-	6.97
Trashigang	102	5.15	0.05	-	5.19
Trashi Yangtse	11	0.20	0.02	-	0.21
Trongsa	72	2.97	0.38	-	3.35
Tsirang	78	0.81	1.48	-	2.29
Wangdue Phodrang	49	0.16	1.73	-	1.89
Zhemgang	9	0.21	0.24	-	0.46
TOTAL	**993**	**25.96**	**18.03**	**0.02**	**44.00**

CHAPTER 6: ROOTS AND TUBER

6.1. Roots and Tuber production by dzongkhag, and by type

Table 6.1 shows the total production of roots and tuber by type in 2019. A total of about 44,521 MT of roots and tuber were produced in 2019. The commonly grown roots and tuber in the country are potato, cassava, taro and ground apple.

Table 6. 1 Total roots & tuber production by type, 2019

Type	Sown Area	Harvest Area	Production
	(Acre)		(MT)
Potato	10,764.38	10,342.26	43,560.27
Sweet potato	64.51	61.64	47.80
Cassava	375.19	329.17	483.61
Taro	132.48	127.30	209.88
Ground apple	61.15	60.57	210.61
Other roots & tuber n.e.c	4.50	4.50	8.61
TOTAL	**11,402.21**	**10,925.44**	**44,520.78**

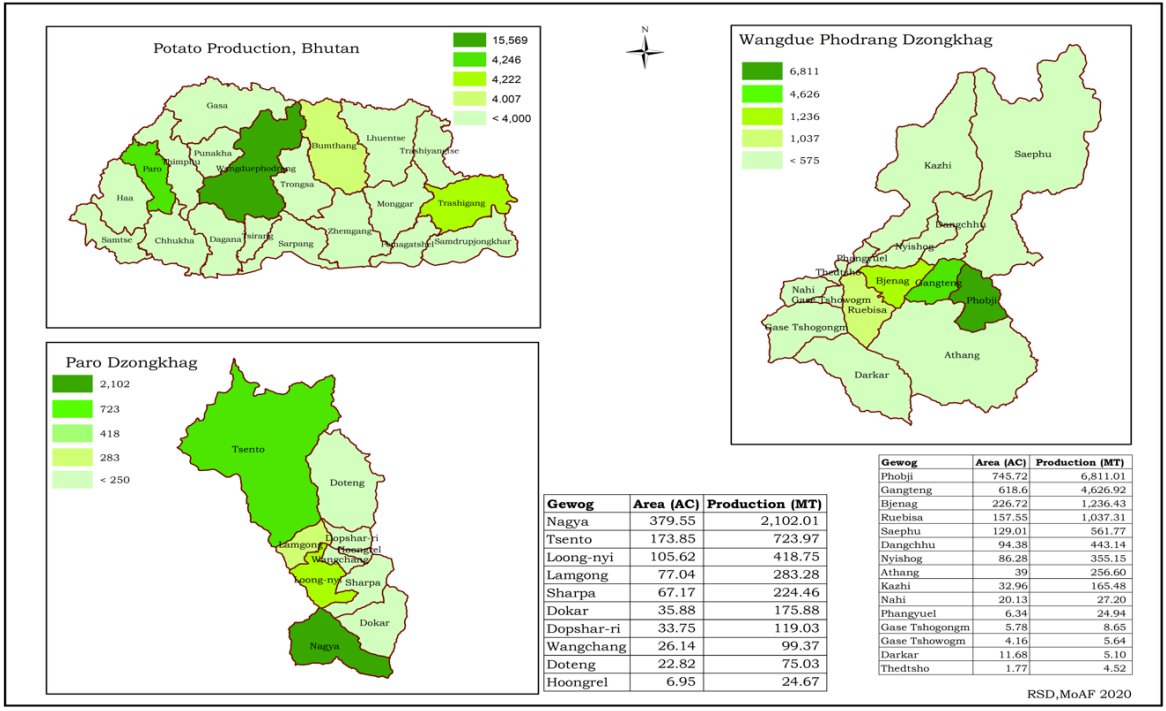
Among the roots and tuber, potato has been one of the highest cash crops exported to India and this generates a lot of revenue to the farming population. A total of about 43,560 MT of potatoes were produced, of which, the highest production was recorded in Wangdue Phodrang (about 36 percent), Paro (about 10 percent) and Trashigang (about 10 percent).

Figure 6.1 gives the production of potato by Wangdue Phodrang and Paro dzongkhags. In Wangdue Phodrang, Phobji (about 44 percent), Gangteng (about 30 percent) and Bjenag (about 7.9 percent) account for the highest production. In Paro, Nagya (about 50 percent), Tsento (about 17 percent) and Loong-nyi (about 10 percent) account for the highest production.

In terms of the cassava production, from the total of 484 MT, Chhukha (about 26 percent), Samtse (about 22 percent) and Dagana (about 20 percent) dzongkhags are the highest producer of cassava.

The production of ground apple, although a recently picked farming business, the production has almost reached to 211 MT. Across the dzongkhag, Chhukha alone accounts for 53 percent, followed by Samtse dzongkhag with almost 20 percent of the total production. Table 6.2 – 6.7 give the production of different roots and tubers by type and by dzongkhag.

Figure 6. 1 Potato production (MT) by Wangdue Phodrang and Paro dzongkhags, 2019



Gewog	Area (AC)	Production (MT)
Nagya	379.55	2,102.01
Tsento	173.85	723.97
Loong-nyi	105.62	418.75
Lamgong	77.04	283.28
Sharpa	67.17	224.46
Dokar	35.88	175.88
Dopshar-ri	33.75	119.03
Wangchang	26.14	99.37
Doteng	22.82	75.03
Hoongrel	6.95	24.67

Gewog	Area (AC)	Production (MT)
Phobji	745.72	6,811.01
Gangteng	618.6	4,626.92
Bjenag	226.72	1,236.43
Ruebisa	157.55	1,037.31
Saephu	129.01	561.77
Dangchhu	94.38	443.14
Nyishog	86.28	355.15
Athang	39	256.60
Kazhi	32.96	165.48
Nahi	20.13	27.20
Phangyuel	6.34	24.94
Gase Tshogongm	5.78	8.65
Gase Tshowogm	4.16	5.64
Darkar	11.68	5.10
Thedtsho	1.77	4.52

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Table 6. 2 Potato prouduction by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Potato)		
Bumthang	644.33	615.07	4,007.93
Chhukha	452.35	440.66	2,420.65
Dagana	182.53	178.40	283.39
Gasa	74.29	74.29	185.24
Haa	345.51	326.74	1,512.00
Lhuntse	260.24	242.01	593.20
Monggar	1,569.23	1,488.21	3,171.93
Paro	955.18	928.77	4,246.45
Pema Gatshel	411.98	383.02	1,356.54
Punakha	46.06	45.20	173.71
Samdrup Jongkhar	514.95	510.74	1,102.89
Samtse	268.85	264.66	433.88
Sarpang	176.44	172.11	364.76
Thimphu	260.02	248.39	1,470.04
Trashigang	1,445.74	1,362.71	4,222.53
Trashi Yangtse	491.90	467.65	1,476.45
Trongsa	175.30	166.06	627.24
Tsirang	192.76	189.22	265.78
Wangdue Phodrang	2,233.57	2,180.08	15,569.87
Zhemgang	63.15	58.27	75.78
TOTAL	**10,764.38**	**10,342.26**	**43,560.27**

Table 6. 3 Sweet potato production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Sweet potato)		
Bumthang	-	-	-
Chhukha	3.83	2.90	1.64
Dagana	3.59	3.59	1.87
Gasa	-	-	-
Haa	0.26	0.26	0.15
Lhuntse	1.57	1.57	0.81
Monggar	16.31	16.31	7.02
Paro	-	-	-
Pema Gatshel	5.23	4.97	3.21
Punakha	1.33	1.29	1.91
Samdrup Jongkhar	1.15	0.97	1.31
Samtse	16.33	16.04	5.77
Sarpang	1.87	1.79	3.57
Thimphu	-	-	-
Trashigang	5.74	4.79	12.41
Trashi Yangtse	0.86	0.86	0.32
Trongsa	-	-	-
Tsirang	5.57	5.48	6.70
Wangdue Phodrang	0.55	0.50	0.44
Zhemgang	0.32	0.32	0.65
TOTAL	**64.51**	**61.64**	**47.80**

Table 6. 4 Cassava production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Cassava)		
Bumthang	-	-	-
Chhukha	99.42	81.14	126.19
Dagana	37.57	37.29	97.51
Gasa	-	-	-
Haa	2.06	2.04	3.35
Lhuntse	-	-	-
Monggar	8.76	8.49	7.54
Paro	-	-	-
Pema Gatshel	21.99	18.18	40.44
Punakha	0.07	0.07	0.16
Samdrup Jongkhar	16.37	15.26	20.94
Samtse	138.82	122.63	107.54
Sarpang	16.78	11.52	28.23
Thimphu	-	-	-
Trashigang	2.01	1.91	2.42
Trashi Yangtse	0.90	0.87	0.89
Trongsa	-	-	-
Tsirang	25.66	25.26	34.57
Wangdue Phodrang	0.08	0.08	0.18
Zhemgang	4.70	4.43	13.64
TOTAL	**375.19**	**329.17**	**483.61**

Table 6. 5 Taro production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
		(Taro)	
Bumthang	-	-	-
Chhukha	21.55	20.21	37.37
Dagana	8.53	7.85	7.99
Gasa	-	-	-
Haa	-	-	-
Lhuntse	-	-	0.02
Monggar	19.73	19.60	37.88
Paro	-	-	-
Pema Gatshel	6.29	4.89	14.63
Punakha	0.06	0.06	0.06
Samdrup Jongkhar	12.10	11.92	6.22
Samtse	32.54	31.88	44.27
Sarpang	8.77	8.18	22.30
Thimphu	-	-	-
Trashigang	0.79	0.73	0.74
Trashi Yangtse	1.49	1.49	0.66
Trongsa	-	-	-
Tsirang	13.05	12.97	21.42
Wangdue Phodrang	-	-	-
Zhemgang	7.58	7.52	16.32
TOTAL	**132.48**	**127.30**	**209.88**

Table 6. 6 Ground apple production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Ground apple)		
Bumthang	-	-	-
Chhukha	28.10	27.71	111.06
Dagana	2.01	2.01	4.97
Gasa	-	-	-
Haa	-	-	-
Lhuntse	0.06	0.06	0.37
Monggar	2.98	2.98	2.77
Paro	0.12	0.12	0.34
Pema Gatshel	1.08	1.08	1.74
Punakha	1.65	1.65	5.32
Samdrup Jongkhar	1.46	1.46	2.56
Samtse	8.96	8.96	42.80
Sarpang	1.46	1.46	2.54
Thimphu	0.53	0.53	0.86
Trashigang	0.53	0.53	1.52
Trashi Yangtse	1.67	1.67	1.83
Trongsa	0.61	0.61	4.04
Tsirang	9.70	9.51	27.61
Wangdue Phodrang	0.23	0.23	0.28
Zhemgang	-	-	-
TOTAL	**61.15**	**60.57**	**210.61**

Table 6. 7 Other roots & tuber production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Other roots & tubers n.e.c)		
Bumthang	-	-	-
Chhukha	0.87	0.87	1.74
Dagana	0.47	0.47	1.09
Gasa	0.04	0.04	0.09
Haa	-	-	-
Lhuntse	-	-	-
Monggar	0.28	0.28	0.96
Paro	-	-	-
Pema Gatshel	-	-	-
Punakha	-	-	-
Samdrup Jongkhar	0.77	0.77	2.10
Samtse	-	-	-
Sarpang	0.62	0.62	2.15
Thimphu	1.43	1.43	0.42
Trashigang	-	-	-
Trashi Yangtse	-	-	-
Trongsa	-	-	-
Tsirang	0.02	0.02	0.06
Wangdue Phodrang	-	-	-
Zhemgang	-	-	-
TOTAL	**4.50**	**4.50**	**8.61**

CHAPTER 7: FRUITS

7.1. Fruits production by dzongkhag and by type

Table 7.1 shows the total production of fruits by type in 2019. A total of about 60,022 MT of fruits were produced in 2019. The major fruits grown in the country are apple, arecanut, mandarin and mango.

Figure 7.1 presents the major fruit crop production by dzongkhag, 2019. Sarpang (about 19 percent), Samtse (about 16 percent) and Samdrup Jongkhag (about 15 percent) were the top three dzongkhags that produced major fruit crops.

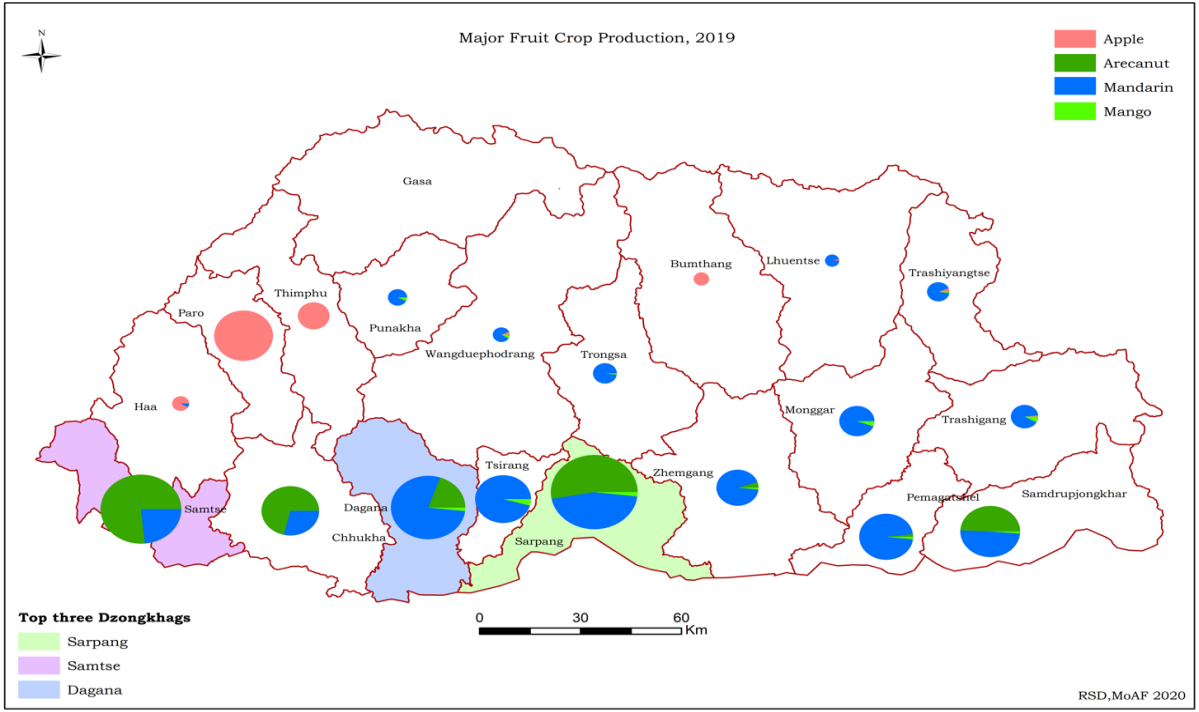
There was a total of 4,321 MT of apple production in 2019, of which, Paro and Thimphu combined accounts for 88 percent of the total production. In terms of arecanut production, of the total 16,107 MT, Samtse (38 percent) and Sarpang (about 33 percent) dzongkhags account for the highest production. A total of 666 MT of mango were produced, and the highest production were from Sarpang (about 18 percent), Tsirang (about 18 percent) and Dagana (about 12 percent).

A total of 27,530 MT of mandarin production was recorded in 2019. Samdrup Jongkhar (about 20 percent) and Dagana (about 17 percent) dzongkhags account for the highest production. Figure 7.2 gives the mandarin production by Samdrup Jongkhar and Dagana dzongkhags. In Samdrup Jongkhar, Gomdar (about 50 percent), Wangphu (about 21 percent) and Serthig gewogs (about 13 percent) account for the highest production. Gomdar gewog alone accounts for about 10 percent of the total mandarin production in the country. In Dagana, Drukjeygang (about 31 percent), Gozhi (about 16 percent) and Tsangkha (about 12 percent) gewogs account for the highest production among others.

Table 7. 1 Total fruits production by type, 2019

Type	Total trees	Bearing trees	Production (MT)
Apple	263,702	197,196	4,321.40
Pear	60,202	28,763	1,583.59
Peach	55,985	34,315	1,245.94
Plum	17,294	11,449	585.12
Apricot	1,301	704	15.21
Persimmon	9,281	4,665	234.56
Date-plum	1,884	1,400	19.14
Walnut	26,715	9,469	256.11
Lemons & lime	27,625	7,015	125.76
Arecanut	4,090,171	1,510,628	16,106.87
Mandarin	1,874,482	960,851	27,529.49
Hazelnut	923,002	42,420	3.05
Mango	93,534	25,641	665.66
Guava	65,811	49,738	1,368.88
Pomegranate	15,676	5,523	78.85
Avocado	87,266	3,103	61.19
Litchi	52,549	13,515	384.69
Jackfruit	8,859	3,286	469.17
Banana	778,127	236,623	3,753.73
Tree tomato	49,643	39,986	358.69
Dragon fruit	1,245	59	0.23
Kiwi	6,899	1,954	19.60
Papaya	19,870	9,357	215.65
Coffee	47,497	34,425	8.15
Watermelon	-	-	66.47
Sugarcane	-	-	396.34
Pineapple	251,225	129,043	148.71
TOTAL	**8,829,845**	**3,361,128**	**60,022.25**

Figure 7. 1 Major fruit production by dzongkhag, 2019

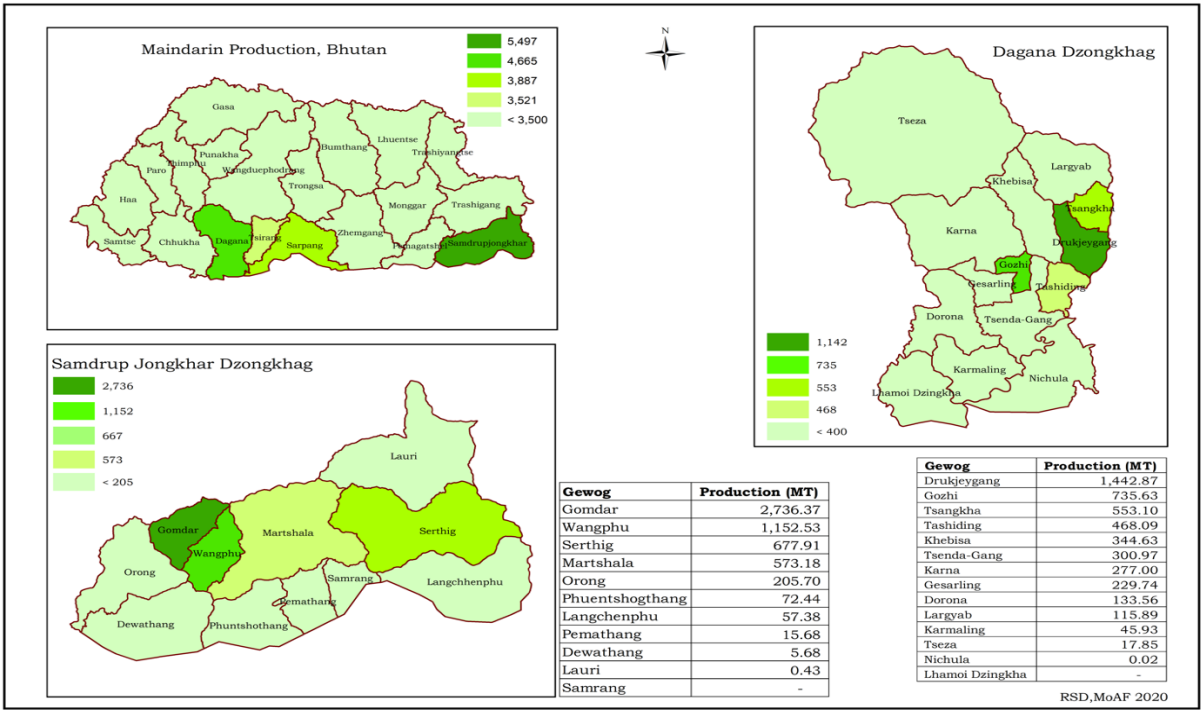


Hazelnut plantations have received huge attention by many farmers in Bhutan. The number of plants as per the survey was recorded at 923,002 plants, of which, bearing plants are 42,420. A slightly more than 3 MT of hazelnut production was observed in 2019. Although, Trashigang (about 55 percent) exceeds Monggar (about 24 percent) dzongkhag in terms of the number of hazelnuts bearing plants, the production is otherwise. From the total production, Monggar and Trashigang dzongkhags respectively account for 41 and 29 percent.

Cardamom, on the other hand, is also one of the prominent permanent crops, and the highest production were recorded in Samtse (about 24 percent) and Chhukha (about 18 percent) dzongkhags. Figure 7.3 gives the production of cardamom by Samtse and Chhukha dzongkhags, 2019. In Samtse, Tendruk (about 21 percent), Duenchhukha (about 18 percent) and Norgaygang (about 18 percent) gewogs account for the highest production. In Chhukha, Darla (about 31 percent), Bongo (slightly more than 14 percent) and Loggchina (about 13 percent) gewogs account for the highest production among others.

There were 396 MT of sugarcane produced in 2019, and Pema Gatshel dzongkhag alone accounts for 53 percent of the total sugarcane production in the country. In terms of pineapple, a total of 149 MT was produced, and the highest production are in Pema Gatshel (about 35 percent), Sarpang (about 18 percent) and Samtse (about 16 percent). Table 7.2 – 7.28 provide the detailed production of fruits by type and by dzongkhag.

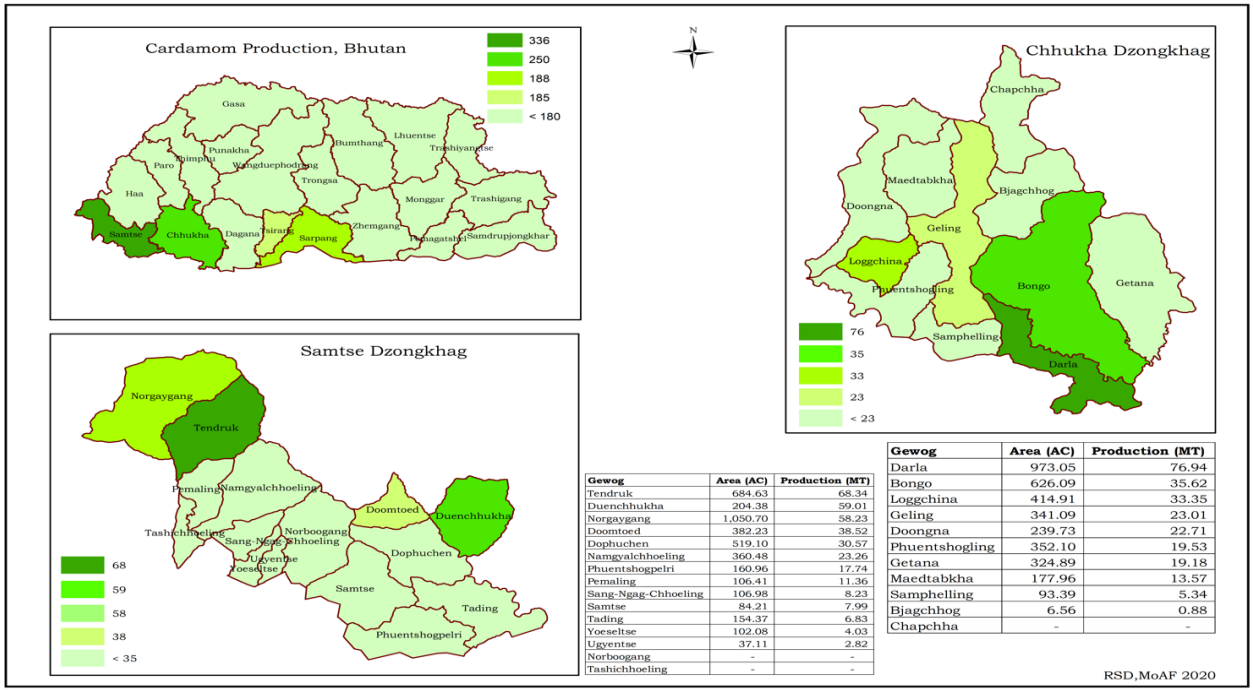
Figure 7. 2 Mandarin production (MT) by Samdrup Jongkhar and Dagana dzongkhags, 2019



Gewog	Production (MT)
Gomdar	2,736.37
Wangphu	1,152.53
Serthig	677.91
Martshala	573.18
Orong	205.70
Phuentshogthang	72.44
Langchenphu	57.38
Pemathang	15.68
Dewathang	5.68
Lauri	0.43
Samrang	-

Gewog	Production (MT)
Drukjeygang	1,442.87
Gozhi	735.63
Tsangkha	553.10
Tashiding	468.09
Khebisa	344.63
Tsenda-Gang	300.97
Karna	277.00
Gesarling	229.74
Dorona	133.56
Largyab	115.89
Karmaling	45.93
Tseza	17.85
Nichula	0.02
Lhamoi Dzingkha	-

Figure 7. 3 Cardamom production (MT) by Samtse and Chhukha dzongkhags, 2019



Gewog	Area (AC)	Production (MT)
Tendruk	684.63	68.34
Duenchhukha	204.38	59.01
Norgaygang	1,050.70	58.23
Doomtoed	382.23	38.52
Dophuchen	519.10	30.57
Namgyalchhoeling	360.48	23.26
Phuentshogpelri	160.96	17.74
Pemaling	106.41	11.36
Sang-Ngag-Chhoeling	106.98	8.23
Samtse	84.21	7.99
Tading	154.37	6.83
Yoeseltse	102.08	4.03
Ugyentse	37.11	2.82
Norboogang	-	-
Tashichhoeling	-	-

Gewog	Area (AC)	Production (MT)
Darla	973.05	76.94
Bongo	626.09	35.62
Loggchina	414.91	33.35
Geling	341.09	23.01
Doongna	239.73	22.71
Phuentshogling	352.10	19.53
Getana	324.89	19.18
Maedtabkha	177.96	13.57
Samphelling	93.39	5.34
Bjagchhog	6.56	0.88
Chapchha	-	-

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Table 7. 2 Apple production by dzongkhag, 2019

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Apple)		
Bumthang	6,874	5,691	200.60
Chhukha	2,150	687	18.59
Dagana	582	73	0.40
Gasa	66	17	0.10
Haa	13,129	8,972	224.80
Lhuntse	1,570	363	6.71
Monggar	2,391	827	9.78
Paro	161,784	126,931	2,950.71
Pema Gatshel	928	203	2.69
Punakha	21	2	0.05
Samdrup Jongkhar	1,764	11	0.03
Samtse	24	-	-
Sarpang	73	50	0.01
Thimphu	60,525	48,668	850.87
Trashigang	1,372	506	10.65
Trashi Yangtse	8,286	3,186	25.88
Trongsa	217	162	2.10
Tsirang	133	36	0.13
Wangdue Phodrang	1,787	813	17.30
Zhemgang	25	-	-
TOTAL	**263,702**	**197,196**	**4,321.40**

Table 7. 3 Pear production by dzongkhag, 2019

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Pear)		
Bumthang	532	401	50.82
Chhukha	1,776	1,085	54.37
Dagana	1,841	1,276	275.30
Gasa	936	377	5.88
Haa	166	62	4.08
Lhuntse	4,435	1,086	31.48
Monggar	11,490	5,629	142.34
Paro	1,637	904	37.10
Pema Gatshel	3,742	1,486	34.05
Punakha	3,729	1,704	72.58
Samdrup Jongkhar	2,788	1,107	75.53
Samtse	1,499	1,004	65.55
Sarpang	1,460	1,031	70.31
Thimphu	1,097	494	14.57
Trashigang	10,610	4,539	212.69
Trashi Yangtse	4,734	2,338	80.05
Trongsa	1,802	672	19.09
Tsirang	2,892	2,080	245.50
Wangdue Phodrang	2,748	1,382	89.18
Zhemgang	286	104	3.13
TOTAL	**60,202**	**28,763**	**1,583.59**

Table 7. 4 Peach production by dzongkhag, 2019

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Peach)		
Bumthang	594	438	17.63
Chhukha	2,569	2,039	57.81
Dagana	2,249	1,569	50.13
Gasa	435	216	3.80
Haa	386	296	9.19
Lhuntse	3,787	2,082	74.45
Monggar	11,797	3,544	98.56
Paro	2,436	1,940	81.65
Pema Gatshel	4,373	2,423	62.52
Punakha	3,230	2,171	85.82
Samdrup Jongkhar	3,403	2,643	107.10
Samtse	2,527	1,963	57.92
Sarpang	1,361	1,078	27.64
Thimphu	1,356	1,027	23.11
Trashigang	4,295	3,162	180.21
Trashi Yangtse	2,172	1,651	79.98
Trongsa	1,770	945	23.95
Tsirang	3,691	2,688	118.79
Wangdue Phodrang	2,146	1,477	55.83
Zhemgang	1,409	963	29.84
TOTAL	**55,985**	**34,315**	**1,245.94**

Table 7. 5 Plum production by dzongkhag, 2019

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Plum)		
Bumthang	481	327	14.11
Chhukha	274	198	4.80
Dagana	1,377	985	39.21
Gasa	81	19	0.56
Haa	17	17	0.74
Lhuntse	1,877	917	42.42
Monggar	2,017	1,532	99.14
Paro	296	241	7.39
Pema Gatshel	1,513	721	67.48
Punakha	704	512	13.46
Samdrup Jongkhar	1,004	682	34.71
Samtse	747	303	3.06
Sarpang	877	726	31.48
Thimphu	318	265	9.20
Trashigang	1,952	1,295	62.96
Trashi Yangtse	799	523	24.77
Trongsa	483	323	10.86
Tsirang	1,657	1,329	94.74
Wangdue Phodrang	485	317	18.40
Zhemgang	337	220	5.64
TOTAL	**17,294**	**11,449**	**585.12**

Table 7. 6 Apricot production by dzongkhag, 2019

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Apricot)		
Bumthang	11	11	0.06
Chhukha	34	6	0.15
Dagana	84	55	3.43
Gasa	-	-	-
Haa	8	3	0.05
Lhuntse	103	29	0.25
Monggar	110	60	0.90
Paro	162	159	3.06
Pema Gatshel	66	-	-
Punakha	34	14	0.53
Samdrup Jongkhar	4	-	-
Samtse	155	99	0.94
Sarpang	27	-	-
Thimphu	217	116	3.15
Trashigang	43	29	0.41
Trashi Yangtse	-	-	-
Trongsa	51	14	0.25
Tsirang	153	71	1.35
Wangdue Phodrang	32	32	0.58
Zhemgang	6	6	0.10
TOTAL	**1,301**	**704**	**15.21**

Table 7. 7 Persimmon production by dzongkhag, 2019

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Persimmon)		
Bumthang	-	-	-
Chhukha	60	5	0.14
Dagana	210	61	0.69
Gasa	48	24	0.23
Haa	42	23	0.38
Lhuntse	586	89	0.69
Monggar	1,491	697	15.76
Paro	432	228	13.69
Pema Gatshel	696	257	3.23
Punakha	2,031	1,253	68.56
Samdrup Jongkhar	95	38	0.42
Samtse	74	22	0.41
Sarpang	5	5	0.00
Thimphu	168	78	3.68
Trashigang	711	320	12.69
Trashi Yangtse	377	231	4.27
Trongsa	413	185	9.28
Tsirang	289	6	0.52
Wangdue Phodrang	1,496	1,097	98.58
Zhemgang	58	45	1.33
TOTAL	**9,281**	**4,665**	**234.56**

Table 7. 8 Date-plum production by dzongkhag, 2019

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Date-plum)		
Bumthang	-	-	-
Chhukha	40	24	0.16
Dagana	56	27	0.65
Gasa	41	41	0.48
Haa	-	-	-
Lhuntse	213	132	1.44
Monggar	320	233	3.60
Paro	169	142	1.69
Pema Gatshel	65	47	0.86
Punakha	217	164	1.76
Samdrup Jongkhar	9	-	-
Samtse	3	-	-
Sarpang	-	-	-
Thimphu	-	-	-
Trashigang	163	116	1.34
Trashi Yangtse	247	225	1.89
Trongsa	109	80	1.99
Tsirang	84	44	0.90
Wangdue Phodrang	147	125	2.36
Zhemgang	-	-	-
TOTAL	**1,884**	**1,400**	**19.14**

Table 7. 9 Walnut production by dzongkhag, 2019

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Walnut)		
Bumthang	923	602	8.18
Chhukha	397	83	2.01
Dagana	834	311	5.32
Gasa	45	-	-
Haa	333	128	11.87
Lhuntse	1,229	424	13.32
Monggar	1,909	885	15.38
Paro	2,292	1,366	48.66
Pema Gatshel	1,187	356	5.78
Punakha	1,687	800	10.49
Samdrup Jongkhar	1,341	243	6.95
Samtse	395	-	-
Sarpang	43	19	0.11
Thimphu	1,192	777	17.40
Trashigang	5,722	1,601	77.04
Trashi Yangtse	2,252	751	13.08
Trongsa	2,452	461	11.46
Tsirang	829	45	0.34
Wangdue Phodrang	1,388	543	6.69
Zhemgang	267	73	2.03
TOTAL	**26,715**	**9,469**	**256.11**

Table 7. 10 Lemons & lime production by dzongkhag, 2019

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Lemons & Lime)		
Bumthang	-	-	-
Chhukha	2,159	769	19.29
Dagana	919	517	14.07
Gasa	-	-	-
Haa	99	31	1.96
Lhuntse	180	117	1.42
Monggar	142	92	1.50
Paro	6	3	0.00
Pema Gatshel	2,937	408	5.65
Punakha	1,016	787	10.08
Samdrup Jongkhar	615	433	4.05
Samtse	14,934	1,706	32.58
Sarpang	2,535	1,177	18.42
Thimphu	-	-	-
Trashigang	173	76	3.78
Trashi Yangtse	9	6	0.06
Trongsa	282	31	1.42
Tsirang	982	506	7.02
Wangdue Phodrang	586	315	3.97
Zhemgang	50	41	0.49
TOTAL	**27,625**	**7,015**	**125.76**

Table 7. 11 Arecanut production by dzongkhag, 2019

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Arecanut)		
Bumthang	-	-	-
Chhukha	286,470	119,023	1,984.26
Dagana	399,012	131,423	923.31
Gasa	-	-	-
Haa	-	-	-
Lhuntse	-	-	-
Monggar	1,438	351	1.41
Paro	-	-	-
Pema Gatshel	57,617	9,191	46.84
Punakha	-	-	-
Samdrup Jongkhar	257,383	100,254	1,491.83
Samtse	1,422,690	553,830	6,192.55
Sarpang	1,632,229	590,763	5,379.97
Thimphu	-	-	-
Trashigang	3	-	-
Trashi Yangtse	-	-	-
Trongsa	-	-	-
Tsirang	3,403	658	8.66
Wangdue Phodrang	-	-	-
Zhemgang	29,928	5,136	78.04
TOTAL	**4,090,171**	**1,510,628**	**16,106.87**

Table 7. 12 Mandarin production by dzongkhag, 2019

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Mandarin)		
Bumthang	-	-	-
Chhukha	113,646	54,903	797.13
Dagana	250,193	133,201	4,665.29
Gasa	77	77	1.76
Haa	13,682	2,052	21.70
Lhuntse	25,439	10,324	166.31
Monggar	107,857	36,879	987.15
Paro	-	-	-
Pema Gatshel	275,147	166,238	2,368.48
Punakha	21,923	14,030	285.94
Samdrup Jongkhar	302,181	143,539	5,497.31
Samtse	106,027	57,352	1,287.17
Sarpang	158,283	120,100	3,887.84
Thimphu	-	-	-
Trashigang	50,246	16,283	571.55
Trashi Yangtse	31,761	13,205	386.78
Trongsa	23,504	10,906	472.21
Tsirang	184,627	99,125	3,521.31
Wangdue Phodrang	10,454	5,409	207.24
Zhemgang	199,435	77,228	2,404.32
TOTAL	**1,874,482**	**960,851**	**27,529.49**

Table 7. 13 Hazelnut production by dzongkhag, 2019

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Hazelnut)		
Bumthang	17,684	143	0.01
Chhukha	2,882	-	-
Dagana	27,083	-	-
Gasa	1,089	-	-
Haa	25,617	202	0.01
Lhuntse	38,726	2,669	0.26
Monggar	140,989	10,289	1.26
Paro	155	-	-
Pema Gatshel	93,865	1,577	0.22
Punakha	35,575	-	-
Samdrup Jongkhar	138,166	1,082	-
Samtse	5	-	-
Sarpang	2,386	-	-
Thimphu	7,669	737	0.02
Trashigang	244,464	23,328	0.88
Trashi Yangtse	30,724	2,387	0.39
Trongsa	23,587	3	-
Tsirang	50,337	3	-
Wangdue Phodrang	31,072	-	-
Zhemgang	10,930	-	-
TOTAL	**923,002**	**42,420**	**3.05**

Table 7. 14 Mango production by dzongkhag, 2019

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Mango)		
Bumthang	-	-	-
Chhukha	3,096	802	17.36
Dagana	7,498	2,591	81.99
Gasa	-	-	-
Haa	189	5	0.63
Lhuntse	21	5	0.09
Monggar	4,682	2,270	58.79
Paro	-	-	-
Pema Gatshel	23,374	5,328	43.76
Punakha	1,527	836	23.21
Samdrup Jongkhar	10,648	1,724	38.44
Samtse	7,173	1,409	44.40
Sarpang	9,248	2,989	120.52
Thimphu	-	-	-
Trashigang	6,104	1,421	52.15
Trashi Yangtse	1,601	612	11.33
Trongsa	2,089	274	10.80
Tsirang	9,528	3,092	116.53
Wangdue Phodrang	966	383	21.44
Zhemgang	5,789	1,901	24.23
TOTAL	**93,534**	**25,641**	**665.66**

Table 7. 15 Guava production by dzongkhag, 2019

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Guava)		
Bumthang	-	-	-
Chhukha	3,121	2,349	39.59
Dagana	6,066	4,682	111.76
Gasa	-	-	-
Haa	373	145	4.30
Lhuntse	528	404	9.26
Monggar	2,598	2,103	44.64
Paro	-	-	-
Pema Gatshel	8,107	4,372	93.89
Punakha	9,710	9,210	331.57
Samdrup Jongkhar	4,637	3,392	84.62
Samtse	5,686	3,889	87.82
Sarpang	6,880	5,240	112.65
Thimphu	-	-	-
Trashigang	1,779	1,417	57.15
Trashi Yangtse	1,161	991	27.72
Trongsa	2,379	2,133	88.04
Tsirang	8,993	6,613	192.75
Wangdue Phodrang	1,816	1,436	43.85
Zhemgang	1,978	1,363	39.26
TOTAL	**65,811**	**49,738**	**1,368.88**

Table 7. 16 Pomegranate production by dzongkhag, 2019

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Pomegranate)		
Bumthang	-	-	-
Chhukha	1,157	63	0.28
Dagana	2,508	992	12.81
Gasa	-	-	-
Haa	94	-	-
Lhuntse	274	201	3.75
Monggar	651	364	4.25
Paro	80	53	3.04
Pema Gatshel	3,392	383	4.79
Punakha	960	603	9.35
Samdrup Jongkhar	1,057	482	3.49
Samtse	607	141	2.78
Sarpang	221	48	0.29
Thimphu	2	-	-
Trashigang	446	331	8.51
Trashi Yangtse	136	97	0.73
Trongsa	236	136	1.57
Tsirang	3,069	1,250	17.43
Wangdue Phodrang	745	356	5.54
Zhemgang	41	23	0.23
TOTAL	**15,676**	**5,523**	**78.85**

Table 7. 17 Avocado production by dzongkhag, 2019

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Avocado)		
Bumthang	-	-	-
Chhukha	21,770	41	1.35
Dagana	6,049	207	3.05
Gasa	10	-	-
Haa	1,122	8	0.04
Lhuntse	937	24	0.39
Monggar	8,538	552	9.90
Paro	-	-	-
Pema Gatshel	9,034	311	7.28
Punakha	1,917	158	3.53
Samdrup Jongkhar	4,565	320	5.41
Samtse	3,429	294	5.80
Sarpang	5,569	187	3.58
Thimphu	-	-	-
Trashigang	1,675	74	3.24
Trashi Yangtse	447	14	0.28
Trongsa	2,322	132	2.23
Tsirang	9,935	340	7.24
Wangdue Phodrang	2,153	152	1.74
Zhemgang	7,792	290	6.13
TOTAL	**87,266**	**3,103**	**61.19**

Table 7. 18 Litchi production by dzongkhag, 2019

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Litchi)		
Bumthang	-	-	-
Chhukha	2,743	566	18.08
Dagana	5,246	990	31.21
Gasa	-	-	-
Haa	25	-	-
Lhuntse	-	-	-
Monggar	900	125	1.28
Paro	-	-	-
Pema Gatshel	8,679	869	9.42
Punakha	7	2	0.07
Samdrup Jongkhar	5,069	738	33.56
Samtse	5,972	1,882	58.01
Sarpang	15,519	7,313	222.63
Thimphu	-	-	-
Trashigang	22	4	0.00
Trashi Yangtse	3	-	-
Trongsa	24	10	0.27
Tsirang	4,692	505	5.54
Wangdue Phodrang	176	4	0.01
Zhemgang	3,469	506	4.59
TOTAL	**52,549**	**13,515**	**384.69**

Table 7. 19 Jackfruit production by dzongkhag, 2019

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Jackfruit)		
Bumthang	-	-	-
Chhukha	406	213	31.16
Dagana	890	274	50.57
Gasa	-	-	-
Haa	-	-	-
Lhuntse	-	-	-
Monggar	136	73	13.07
Paro	-	-	-
Pema Gatshel	2,739	542	74.19
Punakha	45	18	0.41
Samdrup Jongkhar	956	387	34.30
Samtse	1,210	600	95.46
Sarpang	1,437	796	105.83
Thimphu	-	-	-
Trashigang	8	8	0.37
Trashi Yangtse	18	15	1.54
Trongsa	167	21	4.99
Tsirang	387	88	21.70
Wangdue Phodrang	51	7	0.50
Zhemgang	408	243	35.06
TOTAL	**8,859**	**3,286**	**469.17**

Table 7. 20 Banana production by dzongkhag, 2019

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Banana)		
Bumthang	-	-	-
Chhukha	44,658	12,918	202.95
Dagana	66,195	21,341	338.22
Gasa	-	-	-
Haa	4,961	2,915	27.91
Lhuntse	7,505	1,357	12.62
Monggar	22,888	6,543	63.52
Paro	-	-	-
Pema Gatshel	51,902	12,060	214.51
Punakha	3,125	1,029	13.62
Samdrup Jongkhar	61,432	18,128	229.56
Samtse	109,701	31,787	433.29
Sarpang	139,159	52,539	809.85
Thimphu	-	-	-
Trashigang	18,473	5,512	62.17
Trashi Yangtse	7,836	3,703	30.48
Trongsa	11,630	3,721	67.22
Tsirang	185,660	48,780	996.01
Wangdue Phodrang	13,309	3,136	90.95
Zhemgang	29,692	11,152	160.84
TOTAL	**778,127**	**236,623**	**3,753.73**

Table 7. 21 Tree tomato production by dzongkhag, 2019

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Tree tomato)		
Bumthang	-	-	-
Chhukha	2,427	2,097	16.94
Dagana	4,075	2,734	21.37
Gasa	267	239	4.16
Haa	265	208	1.49
Lhuntse	2,925	2,646	35.17
Monggar	4,918	2,668	29.10
Paro	-	-	-
Pema Gatshel	2,745	2,204	22.65
Punakha	5,225	4,464	40.35
Samdrup Jongkhar	1,045	798	8.30
Samtse	1,468	1,169	6.33
Sarpang	5,728	5,324	30.13
Thimphu	-	-	-
Trashigang	1,714	1,414	22.79
Trashi Yangtse	1,138	886	7.09
Trongsa	2,275	1,968	21.49
Tsirang	9,907	8,337	63.77
Wangdue Phodrang	2,258	1,862	17.99
Zhemgang	1,262	969	9.54
TOTAL	**49,643**	**39,986**	**358.69**

Table 7. 22 Dragon fruit production by dzongkhag, 2019

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Dragon fruit)		
Bumthang	-	-	-
Chhukha	-	-	-
Dagana	26	-	-
Gasa	-	-	-
Haa	-	-	-
Lhuntse	4	-	-
Monggar	83	37	0.10
Paro	-	-	-
Pema Gatshel	639	4	0.10
Punakha	-	-	-
Samdrup Jongkhar	350	18	0.04
Samtse	3	-	-
Sarpang	7	-	-
Thimphu	-	-	-
Trashigang	-	-	-
Trashi Yangtse	35	-	-
Trongsa	-	-	-
Tsirang	90	-	-
Wangdue Phodrang	8	-	-
Zhemgang	-	-	-
TOTAL	**1,245**	**59**	**0.23**

Table 7. 23 Kiwi production by dzongkhag, 2019

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Kiwi)		
Bumthang	-	-	-
Chhukha	1,992	1,142	9.38
Dagana	698	85	0.94
Gasa	-	-	-
Haa	-	-	-
Lhuntse	43	-	-
Monggar	14	-	-
Paro	36	-	-
Pema Gatshel	-	-	-
Punakha	546	11	0.01
Samdrup Jongkhar	289	92	1.03
Samtse	137	-	-
Sarpang	124	61	0.60
Thimphu	-	-	-
Trashigang	89	4	0.00
Trashi Yangtse	33	3	0.03
Trongsa	65	-	-
Tsirang	2,337	532	7.49
Wangdue Phodrang	357	17	0.10
Zhemgang	140	6	0.01
TOTAL	**6,899**	**1,954**	**19.60**

Table 7. 24 Papaya production by dzongkhag, 2019

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Papaya)		
Bumthang	-	-	-
Chhukha	108	55	2.11
Dagana	7,578	887	18.03
Gasa	-	-	-
Haa	3	-	-
Lhuntse	9	9	0.22
Monggar	623	525	7.99
Paro	-	-	-
Pema Gatshel	571	353	12.09
Punakha	151	94	1.37
Samdrup Jongkhar	998	818	14.72
Samtse	1,018	633	15.31
Sarpang	4,234	2,957	66.05
Thimphu	-	-	-
Trashigang	207	144	6.01
Trashi Yangtse	106	97	0.94
Trongsa	245	173	3.67
Tsirang	3,727	2,405	61.88
Wangdue Phodrang	207	144	4.11
Zhemgang	86	63	1.14
TOTAL	**19,870**	**9,357**	**215.65**

Table 7. 25 Coffee production by dzongkhag, 2019

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Coffee)		
Bumthang	-	-	-
Chhukha	204	42	0.12
Dagana	713	239	0.17
Gasa	-	-	-
Haa	-	-	-
Lhuntse	-	-	-
Monggar	60	-	-
Paro	-	-	-
Pema Gatshel	1,583	80	0.02
Punakha	-	-	-
Samdrup Jongkhar	45	-	-
Samtse	8,240	1,327	6.06
Sarpang	5,318	1,446	1.36
Thimphu	-	-	-
Trashigang	-	-	-
Trashi Yangtse	-	-	-
Trongsa	31,271	31,271	0.27
Tsirang	64	22	0.16
Wangdue Phodrang	-	-	-
Zhemgang	-	-	-
TOTAL	**47,497**	**34,425**	**8.15**

Table 7. 26 Watermelon production by dzongkhag, 2019

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Watermelon)		
Bumthang	-	-	-
Chhukha	-	-	-
Dagana	2.80	2.79	10.11
Gasa	-	-	-
Haa	0.05	0.05	0.25
Lhuntse	0.39	0.39	1.12
Monggar	2.34	1.97	2.61
Paro	-	-	0.04
Pema Gatshel	3.72	3.53	8.17
Punakha	0.73	0.73	1.95
Samdrup Jongkhar	0.16	0.16	0.48
Samtse	-	-	-
Sarpang	0.19	0.19	0.32
Thimphu	-	-	-
Trashigang	0.54	0.54	2.08
Trashi Yangtse	8.21	7.45	26.01
Trongsa	-	0.14	1.18
Tsirang	2.48	2.48	6.95
Wangdue Phodrang	0.32	0.22	0.73
Zhemgang	1.48	1.33	4.44
TOTAL	**23.41**	**21.97**	**66.47**

Table 7. 27 Sugarcane production by dzongkhag, 2019

Dzongkhag	Harvest area (Acre)	Production (MT)
	(Sugarcane)	
Bumthang	-	-
Chhukha	7.75	22.20
Dagana	6.08	8.97
Gasa	-	-
Haa	2.77	11.73
Lhuntse	0.77	1.82
Monggar	95.03	8.80
Paro	1.72	0.51
Pema Gatshel	42.64	209.93
Punakha	4.33	16.51
Samdrup Jongkhar	5.58	18.70
Samtse	5.86	15.44
Sarpang	5.86	14.53
Thimphu	-	-
Trashigang	4.81	7.59
Trashi Yangtse	0.71	12.01
Trongsa	1.95	10.47
Tsirang	17.87	18.18
Wangdue Phodrang	3.00	17.02
Zhemgang	0.37	1.94
TOTAL	**207.10**	**396.34**

Table 7. 28 Pineapple production by dzongkhag, 2019

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Pineapple)		
Bumthang	-	-	-
Chhukha	29,851	22,953	8.86
Dagana	11,771	6,167	8.38
Gasa	-	-	-
Haa	-	-	-
Lhuntse	11	-	-
Monggar	7,407	4,219	7.63
Paro	-	-	-
Pema Gatshel	94,855	31,911	52.53
Punakha	-	-	-
Samdrup Jongkhar	17,637	6,719	5.83
Samtse	29,888	23,997	23.38
Sarpang	36,392	21,431	26.98
Thimphu	-	-	-
Trashigang	3,677	2,334	2.58
Trashi Yangtse	-	-	-
Trongsa	34	17	0.03
Tsirang	4,978	2,817	4.19
Wangdue Phodrang	10	4	0.00
Zhemgang	14,713	6,473	8.33
TOTAL	**251,225**	**129,043**	**148.71**

ANNEXURE-SURVEY QUESTIONNAIRE

ANNUAL AGRICULTURE SURVEY QUESTIONNAIRE-2019

RNR Statistics Division

Ministry of Agriculture and Forests
Royal Government of Bhutan

1. SECTION A: IDENTIFICATION

A1. Dzongkhag	A2. Gewog	A3. Chiwog	A4. Village	A5. Household_sl.no	A6. House no.	A7. Thram no.	A8. Respondent's name	A9. Contact no. of the HH head

2. SECTION B: CROPS

B1. Did your household grow any **CEREAL CROP** in 2019?
1-Yes| 2-No (If No, skip to **B11)** ☐

B2. Please provide the details of the cereals grown in this gewog. Tick the ones which apply.

B2_1. What cereals did you grow in this gewog in 2019?	**B2_2**. What was the sown area?		**B2_3.** Did your household used irrigation for <cereal name> in 2019? 1-Yes| 2-No (If No, skip to B2_4)			**B2_4.** Did your household lose any <cereal crop name> in 2019? 1-Yes| 2-No (If No, skip to B2_5)		**B2_5**. What was the production?		**D2_6**. Did your household sell <cereal crop name> in 2019? 1-Yes| 2-No (If No, skip to B2_7)		**B2_7**. Did your household retain any CEREAL **SEED** in 2019? 1-Yes| 2-No (If No, skip to B2_8)		**B2_8.** Which of the following inputs were used? Please select all that apply.
	B2_2_1. Select Unit	**B2_2_2.** Area sown	**B2_3_1.** Select Unit	**B2_3_2.** Area irrigated	**B2_3_3.** Irrigation type	**B2_4_1.** Select Unit	**B2_4_2.** Area lost	**B2_5_1.** Select Unit	**B2_5_2.** Qty. produced	**B2_6_1.** Select Unit	**B2_6_2.** Quantity sold	**B2_7_1.** Select Unit	**B2_7_2.** Qty. retained	
1. Paddy (Improved)														
2. Paddy (Local)														
3. Paddy (Upland)														
4. Maize														
5. Wheat														
6. Barley														
7. Millet (all types)														
8. Sweet Buckwheat														
9. Bitter Buckwheat														
10. Amaranthus														
11. Quinoa														

CODES:

unit-*1-Acre; 2-Decimal; 3-Langdo; 4-Dromo; 5-Hall.*
Production/Sold/Seed retained -*1-KG; 2-Drey/Bray/Khaw; 3-Ba-drey/Tho-drey/Wong-drey; 4-Pathi; 5-Phita/Lamshu/Mana*;
Irrigation type-*1-Natural Flow irrigation*; *2-Channel irrigation*; *3-Manually by using hose/bucket/jerrycan etc*; *4-Drip irrigation*; *5-Other*
Input type-*1- Chemical Fertilizer; 2- Manure/Compost; 3- Chemical Pesticide; 4- Non-Chemical Pesticide; 5- Weedicide; 6- None of the above*

Note for all the crops:
** How much Area cultivated in 2019? This refers to whether the farm did double or triple cropping of this crop in 2019.
** Production (Kg)if harvested twice or thrice, then production from each harvest should be summed up to give total.

B3. Did your household grow any **CEREALS** in another gewog in 2019?
1-Yes| 2-No (If No, skip to **B7)** ☐

B4. Which dzongkhag? ☐
B5. Which gewog? ☐

B6. Please provide the details of the cereals grown in another gewog. Tick the ones which apply.

B6_1. What cereals did your household grow in another gewog in 2019?	**B6_2**. What was the sown area?		**B6_3.** Did your household used irrigation for <cereal name> in 2019? 1-Yes| 2-No (If No, skip to B6_4)			**B6_4.** Did your household lose any crops in 2019? 1-Yes| 2-No (If No, skip to B6_5)		**B6_5**. What was the production?		**B6_6**. Did the household sell CEREALS in 2019? 1-Yes| 2-No (If No, skip to B6_7)		**B6_7**. Did the household retain any CEREAL **SEED** in 2019? 1-Yes| 2-No (If No, skip to B6_8)		**B6_8.** Which of the following inputs were used? Please select all that apply
	B6_2_1. Select Unit	**B6_2_2.** Area sown	**B6_3_1.** Select Unit	**B6_3_2.** Area irrigated	**B6_3_3.** Irrigation type	**B6_4_1.** Select Unit	**B6_4_2.** Area	**B6_5_1.** Select Unit	**B6_5_2.** Qty. produced	**B6_6_1.** Select Unit	**B6_6_2.** Qty. sold	**B6_7_1.** Select Unit	**B6_7_2.** Quantity retained	
1. Paddy (Improved)														
2. Paddy (Local)														
3. Paddy (Upland)														
4. Maize														
5. Wheat														
6. Barley														
7. Millet (all types)														
8. Sweet Buckwheat														
9. Bitter Buckwheat														
10. Amaranthus														
11. Quinoa														

CODES:
Unit-*1-Acre; 2-Decimal; 3-Langdo; 4-Dromo; 5-Hall.*
Production/Sold/Seed retained -*1-KG; 2-Drey/Bray/Khaw; 3-Ba-drey/Tho-drey/Wong-drey; 4-Pathi; 5-Phita/Lamshu/Mana*;
Irrigation type-*1-Natural Flow irrigation*; *2-Channel irrigation*; *3-Manually by using hose/bucket/jerrycan etc*; *4-Drip irrigation*; *5-Other*
Input type-*1- Chemical Fertilizer; 2- Manure/Compost; 3- Chemical Pesticide; 4- Non-Chemical Pesticide; 5- Weedicide; 6- None of the above*

Note for all the crops:
** How much Area cultivated in 2019? This refers to whether the farm did double or triple cropping of this crop in 2019.
** Production (Kg)if harvested twice or thrice, then production from each harvest should be summed up to give total.

B7. Did your household grow any **CEREALS** in yet another gewog in 2019?
1-Yes| 2-No (If No, skip to **B11)** ☐

B8. Which dzongkhag? ☐
B9. Which gewog? ☐

B10. Please provide the details of the cereals grown in yet another gewog. Tick the ones which apply.

B10_1. What cereals did your household grow in yet another gewog in 2019?	**B10_2**. What was the sown area?		**B10_3.** Did your household used irrigation for <cereal name> in 2019? 1-Yes| 2-No (If No, skip to B6_4)			**B10_4.** Did your household lose any crops in 2019? 1-Yes| 2-No (If No, skip to B6_5)		**B10_5**. What was the production ?		**B10_6**. Did the household sell CEREALS in 2019? 1-Yes| 2-No (If No, skip to B6_7)		**B10_7**. Did the household retain any CEREAL **SEED** in 2019? 1-Yes| 2-No (If No, skip to B6_8)		**B10_8.** Which of the following inputs were used? Please select all that apply
	B10_2_1. Select Unit	**B10_2_2.** Area sown	**B10_3_1.** Select Unit	**B10_3_2.** Area irrigated	**B10_3_3.** Irrigation type	**B10_4_1.** Select Unit	**B10_4_2.** Area lost	**B10_5_1.** Select Unit	**B10_5_2.** Qty. produced	**B10_6_1.** Select Unit	**B10_6_2.** Qty. sold	**B10_7_1.** Select Unit	**B10_7_2.** Quantity retained	
1. Paddy (Improved)														
2. Paddy (Local)														
3. Paddy (Upland)														
4. Maize														
5. Wheat														
6. Barley														
7. Millet (all types)														
8. Sweet Buckwheat														
9. Bitter Buckwheat														
10. Amaranthus														
11. Quinoa														

CODES:
unit-*1-Acre; 2-Decimal; 3-Langdo; 4-Dromo; 5-Hall.*
Production/Sold/Seed retained -*1-KG; 2-Drey/Bray/Khaw; 3-Ba-drey/Tho-drey/Wong-drey; 4-Pathi; 5-Phita/Lamshu/Mana*;
Irrigation type-*1-Natural Flow irrigation*; *2-Channel irrigation*; *3-Manually by using hose/bucket/jerrycan etc*; *4-Drip irrigation*; *5-Other*
Input type-*1- Chemical Fertilizer; 2- Manure/Compost; 3- Chemical Pesticide; 4- Non-Chemical Pesticide; 5- Weedicide; 6- None of the above*

Note for all the crops:
** How much Area cultivated in 2019? This refers to whether the farm did double or triple cropping of this crop in 2019.
** Production (Kg)if harvested twice or thrice, then production from each harvest should be summed up to give total.

B11. Did your household grow any **OILSEEDS** in 2019?
1-Yes| 2-No (If No, skip to **B13)** ☐

B12. For each Oilseeds selected above, provide area cultivated and production. Tick the ones which apply.

B12_1. What oilseeds did your household grow in 2019?	**B12_2**. What was the sown area?		**B12_3.** Did your household used irrigation for <oilseeds name> in 2019? 1-Yes| 2-No (If No, skip to B6_4)			**B12_4.** Did your household lose any crops <oilseed name>in 2019? 1-Yes| 2-No (If No, skip to B6_5)		**B12_5**. What was the production ?		**B12_6**. Did the household sell <oilseed name> in 2019? 1-Yes| 2-No (If No, skip to B6_7)		**B12_7**. Did the household retain any <Oilseed name> for **SEED** in 2019? 1-Yes| 2-No (If No, skip to B6_8)		**B12_8.** Which of the following inputs were used? Please select all that apply
	B12_2_1. Select Unit	**B12_2_2.** Area sown	**B12_3_1.** Select Unit	**B12_3_2.** Area irrigated	**B12_3_3.** Irrigation type	**B12_4_1.** Select Unit	**B12_4_2.** Area lost	**B12_5_1.** Select Unit	**B12_5_2.** Qty. produced	**B12_6_1.** Select Unit	**B12_6_2.** Qty. sold	**B12_7_1.** Select Unit	**B12_7_2.** Quantity retained	
1. Mustard														
2. Sunflower														
3. Sesame														
4. Groundnut														

CODES:
unit-*1-Acre; 2-Decimal; 3-Langdo; 4-Dromo; 5-Hall.*

Production/Sold/Seed retained-*1-KG; 2-Drey/Bray/Khaw; 3-Ba-drey/Tho-drey/Wong-drey; 4-Pathi; 5-Phita/Lamshu/Mana*;
Irrigation type-*1-Natural Flow irrigation*; *2-Channel irrigation*; *3-Manually by using hose/bucket/jerrycan etc*; *4-Drip irrigation*; *5-Other*
Input type-*1- Chemical Fertilizer; 2- Manure/Compost; 3- Chemical Pesticide; 4- Non-Chemical Pesticide; 5- Weedicide; 6- None of the above*

Note for all the crops:
** How much Area cultivated in 2019? This refers to whether the farm did double or triple cropping of this crop in 2019.
** Production (Kg)if harvested twice or thrice, then production from each harvest should be summed up to give total.

B13. Did your household grow any **PULSES** in 2019?
1-Yes| 2-No (If No, skip to **B15)** ☐

B14. For each pulse selected above, provide area cultivated and production. Tick the ones which apply.

B14_1. What pulses did your household grow in 2019?	**B14_2**. What was the sown area?		**B14_3.** Did your household used irrigation for <pulses name> in 2019? 1-Yes| 2-No (If No, skip to B6_4)			**B14_4.** Did your household lose any crops <pulses name>in 2019? 1-Yes| 2-No (If No, skip to B6_5)		**B14_5**. What was the production ?		**B14_6**. Did the household sell <pulses name> in 2019? 1-Yes| 2-No (If No, skip to B6_7)		**B14_7**. Did the household retain any <pulses name> for **SEED** in 2019? 1-Yes| 2-No (If No, skip to B6_8)		**B14_8.** Which of the following inputs were used? Please select all that apply
	B14_2_1. Select Unit	**B14_2_2.** Area sown	**B14_3_1.** Select Unit	**B14_3_2.** Area irrigated	**B14_3_3.** Irrigation type	**B14_4_1.** Select Unit	**B14_4_2.** Area lost	**B14_5_1.** Select Unit	**B14_5_2.** Qty. produced	**B14_6_1.** Select Unit	**B14_6_2.** Qty. sold	**B14_7_1.** Select Unit	**B14_7_2.** Quantity retained	
1. Beans (inc broad beans) (dry)														
2. Chickpeas														
3. Cowpeas														

B14_1. What pulses did your household grow in 2019?	**B14_2**. What was the sown area?		**B14_3.** Did your household used irrigation for <pulses name> in 2019? 1-Yes| 2-No (If No, skip to B6_4)			**B14_4.** Did your household lose any crops <pulses name>in 2019? 1-Yes| 2-No (If No, skip to B6_5)		**B14_5.** What was the production ?		**B14_6**. Did the household sell <pulses name> in 2019? 1-Yes| 2-No (If No, skip to B6_7)		**B14_7**. Did the household retain any <pulses name> for **SEED** in 2019? 1-Yes| 2-No (If No, skip to B6_8)		**B14_8.** Which of the following inputs were used? Please select all that apply
	B14_2_1. Select Unit	**B14_2_2.** Area sown	**B14_3_1.** Select Unit	**B14_3_2.** Area irrigated	**B14_3_3.** Irrigation type	**B14_4_1.** Select Unit	**B14_4_2.** Area lost	**B14_5_1.** Select Unit	**B14_5_2.** Qty. produced	**B14_6_1.** Select Unit	**B14_6_2.** Qty. sold	**B14_7_1.** Select Unit	**B14_7_2.** Quantity retained	
4. Lentil														
5. Rajmabeans														
6. Mungbeans														
7. Soyabeans														

CODES:
unit-*1-Acre; 2-Decimal; 3-Langdo; 4-Dromo; 5-Hall.*
Production/Sold/Seed retained *-1-KG; 2-Drey/Bray/Khaw; 3-Ba-drey/Tho-drey/Wong-drey; 4-Pathi; 5-Phita/Lamshu/Mana*;
Irrigation type-*1-Natural Flow irrigation*; *2-Channel irrigation*; *3-Manually by using hose/bucket/jerrycan etc*; *4-Drip irrigation*; *5-Other*
Input type-*1- Chemical Fertilizer; 2- Manure/Compost; 3- Chemical Pesticide; 4- Non-Chemical Pesticide; 5- Weedicide; 6- None of the above*

Note for all the crops:
** How much Area cultivated in 2019? This refers to whether the farm did double or triple cropping of this crop in 2019.
** Production (Kg)if harvested twice or thrice, then production from each harvest should be summed up to give total.

B15. Did your household grow any **VEGETABLES** in 2019?
1-Yes| 2-No (If No, skip to **B17)** ☐

B16. Please provide the details of the vegetables grown in 2019. Tick the ones which apply.

B16_1. What vegetables did your household grow in 2019?	**B16_2**. What was the sown area?		**B16_3.** Did your household used irrigation for <vegetable name> in 2019? 1-Yes| 2-No (If No, skip to B6_4)			**B16_4.** Did your household lose any crops <vegetable name>in 2019? 1-Yes| 2-No (If No, skip to B6_5)		**B16_5**. What was the production ?		**B16_6**. Did the household sell <vegetable name> in 2019? 1-Yes| 2-No (If No, skip to B6_7)		**B16_7**. Did the household retain any <vegetable name> for **SEED** in 2019? 1-Yes| 2-No (If No, skip to B6_8)		**B16_8.** Which of the following inputs were used? Please select all that apply
	B16_2_1. Select Unit	**B16_2_2.** Area sown	**B16_3_1.** Select Unit	**B16_3_2.** Area irrigated	**B16_3_3.** Irrigation type	**B16_4_1.** Select Unit	**B16_4_2.** Area lost	**B16_5_1.** Select Unit	**B16_5_2.** Qty. produced	**B16_6_1.** Select Unit	**B16_6_2.** Qty. sold	**B16_7_1.** Select Unit	**B16_7_2.** Quantity retained	
1. Asparagus														
2. Broccoli														
3. Cabbage														
4. Cauliflowr														
5. Chilli														
6. Green leaves														
7. Onion bulb														
8. Ginger														
9. Turmeric														
10. Garlic														
11. Coriander														

B16_1. What vegetables did your household grow in 2019?	**B16_2**. What was the sown area?		**B16_3.** Did your household used irrigation for <vegetable name> in 2019? 1-Yes| 2-No (If No, skip to B6_4)			**B16_4.** Did your household lose any crops <vegetable name>in 2019? 1-Yes| 2-No (If No, skip to B6_5)		**B16_5**. What was the production ?		**B16_6**. Did the household sell <vegetable name> in 2019? 1-Yes| 2-No (If No, skip to B6_7)		**B16_7**. Did the household retain any <vegetable name> for **SEED** in 2019? 1-Yes| 2-No (If No, skip to B6_8)		**B16_8.** Which of the following inputs were used? Please select all that apply
	B16_2_1. Select Unit	**B16_2_2.** Area sown	**B16_3_1.** Select Unit	**B16_3_2.** Area irrigated	**B16_3_3.** Irrigation type	**B16_4_1.** Select Unit	**B16_4_2.** Area lost	**B16_5_1.** Select Unit	**B16_5_2.** Qty. produced	**B16_6_1.** Select Unit	**B16_6_2.** Qty. sold	**B16_7_1.** Select Unit	**B16_7_2.** Quantity retained	
12. Eggplant/Aubergine /brinjal														
13. Okra/ladies finger														
14. Tomato														
15. Cucumber														
16. Pumpkins														
17. Squash														
18. Gourds														
19. Dalle chilli														
20. Carrot														
21. Raddish														
22. Turnip														
23. Watermelon														
24. Beans (green/fresh)														
25. Peas (green/fresh)														

CODES:
unit-*1-Acre; 2-Decimal; 3-Langdo; 4-Dromo; 5-Hall.*

Production/Sold/Seed retained *-1-KG; 2-50 KG; 3-100 KG; 4-Drey/Bray/Khaw; 5-Bundle; 6-Phita/Lamshu/Mana*;
Irrigation type*-1-Natural Flow irrigation*; *2-Channel irrigation*; *3-Manually by using hose/bucket/jerrycan etc*; *4-Drip irrigation*; *5-Other*
Input type*-1- Chemical Fertilizer; 2- Manure/Compost; 3- Chemical Pesticide; 4- Non-Chemical Pesticide; 5- Weedicide; 6- None of the above*

Note for all the crops:
** How much Area cultivated in 2019? This refers to whether the farm did double or triple cropping of this crop in 2019.
** Production (Kg)if harvested twice or thrice, then production from each harvest should be summed up to give total.

B17. Did your household grow **MUSHROOM** in 2019?
1-Yes| 2-No (If No, skip to **B19)** ☐

B18. Please provide the details of mushrooms grown. Tick the ones which apply.

B18_1. What type of mushroom did your household grow in 2019?	**B18_2**. What was the total production in KG?	**B18_3**. Did the household sell <mushroom name> in 2019? 1-Yes| 2-No (If No, skip to B16_7)	**B18_4.** What is the total quantity sold (KG)?
1. Shitake			
2. Oyster			
3. Button			
4. Others (specify)			

B19. Did the household grow any **ROOTS/TUBERS** in 2019?
1-Yes| 2-No (If No, skip to **B21)** ☐

B20. For each crop grown, ask number of times grown, area harvested and production. Tick the ones which apply.

B20_1. What roots & tuber did your household grow in 2019?	**B20_2**. What was the sown area?		**B20_3.** Did your household used irrigation for < roots & tuber name> in 2019? 1-Yes| 2-No (If No, skip to B6_4)			**B20_4.** Did your household lose any crops < roots & tuber name>in 2019? 1-Yes| 2-No (If No, skip to B6_5)		**B20_5**. What was the production?		**B20_6**. Did the household sell < roots & tuber name> in 2019? 1-Yes| 2-No (If No, skip to B6_7)		**B20_7**. Did the household retain any < roots & tuber name> for **SEED** in 2019? 1-Yes| 2-No (If No, skip to B6_8)		**B20_8.** Which of the following inputs were used? Please select all that apply
	B20_2_1. Select Unit	**B20_2_2.** Area sown	**B20_3_1.** Select Unit	**B20_3_2.** Area irrigated	**B20_3_3.** Irrigation type	**B20_4_1.** Select Unit	**B20_4_2.** Area lost	**B20_5_1.** Select Unit	**B20_5_2.** Qty. produced	**B20_6_1.** Select Unit	**B20_6_2.** Qty. sold	**B20_7_1.** Select Unit	**B20_7_2.** Quantity retained	
1. Potato														
2. Sweet potato														
3. Cassava/Tapioca														
4. Taro/Yautia/Colocasia														
5. Ground apple														
6. Other roots & tuber n.e.c														

CODES:
unit-*1-Acre; 2-Decimal; 3-Langdo; 4-Dromo; 5-Hall.*
Production/Sold/Seed retained -*1-KG; 2-50 KG; 3-100 KG; 4-Drey/Bray/Khaw; 5-Bundle; 6-Phita/Lamshu/Mana*;
Irrigation type-*1-Natural Flow irrigation*; *2-Channel irrigation*; *3-Manually by using hose/bucket/jerrycan etc*; *4-Drip irrigation*; *5-Other*
Input type-*1- Chemical Fertilizer; 2- Manure/Compost; 3- Chemical Pesticide; 4- Non-Chemical Pesticide; 5- Weedicide; 6- None of the above*

Note for all the crops:
** How much Area cultivated in 2019? This refers to whether the farm did double or triple cropping of this crop in 2019.

** Production (Kg)if harvested twice or thrice, then production from each harvest should be summed up to give total.

B21. Did your household grow any **FRUIT CROPS** in 2019?
1-Yes| 2-No (If No, skip to **B23)** ☐

B22. For each fruit crop grown, ask the total number of trees and bearing trees, and production. Tick the ones which apply.

B22_1. What Fruit crops did you grow in 2019 in this gewog?	**B22_2.** How many total numbers of trees did your household have in 2019?	**B22_3.** Of the total <fruit trees name> how many are fruit bearing trees?	**B22_4.** What was the production?		**B22_5.** Did your household sell any <fruit crop> in 2019? 1-Yes| 2-No (If No, skip to B22_8)		**B22_8.** Which of the following inputs were used? Please select all that apply.
			B22_4_1. Select Unit	**B22_4_2.** Quantity produced	**B22_5_1.** Select Unit	**B22_5_2.** Quantity sold	
1. Apple							
2. Pear							
3. Peach							
4. Plum							
5. Apricot							
6. Persimmon							
7. Date-plum (gendum)							
8. Walnut							
9. Lemons and limes							
10. Areca nut							
11. Mandarin							
12. Hazelnut							
13. Mango							

B22_1. What Fruit crops did you grow in 2019 in this gewog?	**B22_2.** How many total numbers of trees did your household have in 2019?	**B22_3.** Of the total <fruit trees name> how many are fruit bearing trees?	**B22_4.** What was the production?		**B22_5.** Did your household sell any <fruit crop> in 2019? 1-Yes| 2-No (If No, skip to B22_8)		**B22_8.** Which of the following inputs were used? Please select all that apply.
			B22_4_1. Select Unit	**B22_4_2.** Quantity produced	**B22_5_1.** Select Unit	**B22_5_2.** Quantity sold	
14. Guava							
15. Pomegranate							
16. Avocado							
17. Litchi							
18. Jackfruit							
19. Banana							
20. Tree tomato (Tamarillo)							
21. Dragon fruit							
22. Kiwi							
23. Papaya							
24. Coffee							
25. Pineapple							

CODES:
Production/Sold *-1-KG; 2-Pon; 3-Box;*
Input type*-1- Chemical Fertilizer; 2- Manure/Compost; 3- Chemical Pesticide; 4- Non-Chemical Pesticide; 5- Weedicide; 6- None of the above*
Note for all the fruit crops:
** Production (Kg) if harvested twice or thrice, then production from each harvest should be summed up to give total.

B23. Did your household grow any **FRUIT CROP** in another gewog in 2019?
1-Yes| 2-No (If No, skip to **B27)** ☐

B24. Which dzongkhag? ☐
B25. Which gewog? ☐

B26. Select all **FRUIT CROP** grown in other gewog in 2019.

B26_1. What Fruit crops did you grow in 2019 in other gewog?	**B26_2.** How many total numbers of trees did your household have in 2019?	**B26_3.** Of the total <fruit trees name> how many are fruit bearing trees?	**B26_4.** What was the production?		**B26_5.** Did your household sell any <fruit crop> in 2019? 1-Yes| 2-No (If No, skip to B22_8)		**B26_8.** Which of the following inputs were used? Please select all that apply.
			B26_4_1. Select Unit	**B26_4_2.** Quantity produced	**B26_5_1.** Select Unit	**B26_5_2.** Quantity sold	
1. Apple							
2. Pear							
3. Peach							
4. Plum							
5. Apricot							
6. Persimmon							
7. Date-plum (gendum)							
8. Walnut							
9. Lemons and limes							
10. Areca nut							
11. Mandarin							
12. Hazelnut							

B26_1. What Fruit crops did you grow in 2019 in other gewog?	**B26_2.** How many total numbers of trees did your household have in 2019?	**B26_3.** Of the total <fruit trees name> how many are fruit bearing trees?	**B26_4.** What was the production?		**B26_5.** Did your household sell any <fruit crop> in 2019? 1-Yes| 2-No (If No, skip to B22_8)		**B26_8.** Which of the following inputs were used? Please select all that apply.
			B26_4_1. Select Unit	**B26_4_2.** Quantity produced	**B26_5_1.** Select Unit	**B26_5_2.** Quantity sold	
13. Mango							
14. Guava							
15. Pomegranate							
16. Avocado							
17. Litchi							
18. Jackfruit							
19. Banana							
20. Tree tomato (Tamarillo)							
21. Dragon fruit							
22. Kiwi							
23. Papaya							
24. Coffee							
25. Pineapple							

CODES:
Production/Sold-*1-KG; 2-Pon; 3-Box;*
Input type-*1- Chemical Fertilizer; 2- Manure/Compost; 3- Chemical Pesticide; 4- Non-Chemical Pesticide; 5- Weedicide; 6- None of the above*
Note for all the fruit crops:
** Production (Kg) if harvested twice or thrice, then production from each harvest should be summed up to give total.

B27. Did your household grow any **OTHER PERMANENT CROPS** (e.g. cardamom and sugarcane) in 2019?
1-Yes| 2-No (If No, skip to **C1)** ☐

B28. Please provide the details of other permanent crops grown in 2019.Tick the ones which apply.

B28_1. What other permanent crops did your household grow in in 2019?	**B28_2**. What was the sown area?		**B28_3.** Did your household used irrigation for <permanent crop name> in 2019? 1-Yes| 2-No (If No, skip to B6_4)			**B28_4.** Did your household lose any crops < permanent crop name>in 2019? 1-Yes| 2-No (If No, skip to B6_5)		**B28_5**. What was the production ?		**B28_6**. Did the household sell < permanent crop name> in 2019? 1-Yes| 2-No (If No, skip to B6_7)		**B28_7**. Did the household retain any < permanent crop name> for **SEED** in 2019? 1-Yes| 2-No (If No, skip to B6_8)		**B28_8.** Which of the following inputs were used? Please select all that apply
	B28_2_1. Select Unit	**B28_2_2.** Area sown	**B28_3_1.** Select Unit	**B28_3_2.** Area irrigated	**B28_3_3.** Irrigation type	**B28_4_1.** Select Unit	**B28_4_2.** Area lost	**B28_5_1.** Select Unit	**B28_5_2.** Qty. produced	**B28_6_1.** Select Unit	**B28_6_2.** Qty. sold	**B28_7_1.** Select Unit	**B28_7_2.** Quantity retained	
1. Cardamom														
2. Sugarcane														

CODES:
unit-*1-Acre; 2-Decimal; 3-Langdo; 4-Dromo; 5-Hall.*
Production/Sold/Seed retained *-1-KG; 2-50 KG; 3-100 KG; 4-Drey/Bray/Khaw; 5-Phita/Lamshu/Mana*;
Irrigation type-*1-Natural Flow irrigation*; *2-Channel irrigation*; *3-Manually by using hose/bucket/jerrycan etc*; *4-Drip irrigation*; *5-Other*
Input type-*1- Chemical Fertilizer; 2- Manure/Compost; 3- Chemical Pesticide; 4- Non-Chemical Pesticide; 5- Weedicide; 6- None of the above*

Note for all the crops:
** How much Area cultivated in 2019? This refers to whether the farm did double or triple cropping of this crop in 2019.
** Production (Kg)if harvested twice or thrice, then production from each harvest should be summed up to give total.

3. SECTION C: GLOBAL POSITIONING SYSTEM

C1. Get GPS location? (To get GPS make sure the location function of your device is turned on. GPS location of the holdings will enable MoAF to understand the spatial distribution of the holdings across the country for better land use planning. If you do not intend to capture GPS, you must note the reason (click on Note icon and type the reason) before selecting 'No need'.)

C2-Get GPS; 0-No need (coordinates will be captured in LATITUDE and LONGITUDE)

(If GPS coordinates could not be acquired, just type 0 (zero) and click next.)

THE END