AGRICULTURE STATISTICS

2020

Renewable Natural Resources Statistics Division (RSD)
Directorate Services

ROYAL GOVERNMENT OF BHUTAN
MINISTRY OF AGRICULTURE AND FORESTS

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FOREWORD

The Ministry of Agriculture and Forests (MoAF) is pleased to release the Annual Agriculture Statistics 2020 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 are 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, Dzongkhag Agriculture Officers for their constant effort and support in collecting the information from agriculture households and supporting the RNR statistical framework in the country.

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ACKNOWLEDGEMENT

The Annual Agriculture Statistics 2020, 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 thank all our valued farmers for sharing the information.

(Chewang Jurmi)
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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 2020 AASS enumerated 19,746 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 2020 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 2020 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 2020 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 2020 AASS used the sampling frame from the 2020 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 2020 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 19,820 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	1,327
Gasa	4	562	274
Haa	6	1,437	551
Lhuntse	8	2,061	738
Monggar	17	5,126	1,674
Paro	10	3,266	975
Pema Gatshel	11	3,256	1,061
Punakha	11	2,356	949
Samdrup Jongkhar	11	3,861	1,088
Samtse	15	9,209	1,775
Sarpang	12	5,051	1,267
Thimphu	8	1,209	516
Trashigang	15	6,228	1,623
Trashi Yangtse	8	2,582	803
Trongsa	5	1,469	486
Tsirang	12	3,663	1,199
Wangdue Phodrang	15	3,345	1,292
Zhemgang	8	2,057	752
TOTAL	205	66,199	19,820

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 2020 AASS refers to the household's information for the year 2020. 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.

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 2020 AASS, the response rate was close to cent percent. The overall non-respone rate was very neglibile (about 0.37 percent) for 2020 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 Chukha Dzongkhag.

Table 1. 2 Response rate by Dzongkhag

Dzongkhag	Sample HHs	Enumerated HHs	Response Rate (%)
Bumthang	402	402	100.00
Chhukha	1,079	1,041	96.49
Dagana	1,327	1,307	98.46
Gasa	274	273	99.69
Haa	551	551	100.00
Lhuntse	738	738	99.93
Monggar	1,674	1,674	100.00
Paro	975	975	99.97
Pema Gatshel	1,061	1,061	100.00
Punakha	949	942	99.24
Samdrup Jongkhar	1,088	1,088	100.00
Samtse	1,775	1,772	99.81
Sarpang	1,267	1,256	99.14
Thimphu	516	514	99.52
Trashigang	1,623	1,622	99.96
Trashi Yangtse	803	801	99.81
Trongsa	486	486	100.00
Tsirang	1,199	1,199	100.00
Wangdue Phodrang	1,292	1,292	100.00
Zhemgang	752	752	100.00
TOTAL	19,820	19,746	99.63

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, discussions and endorsement from 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 2020. According to the results of the 2020 Annual Agriculture Sample Survey (AASS), a total of about 102,216 MT of Cereals were produced. The commonly grown cereal crops in the country are paddy, maize, wheat, barley, buckwheat, millet and quinoa.

Table 2. 1 Total cereal production by type, 2020

Type	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Paddy (irrigated)	31,455.40	30,641.42	53,360.93
Paddy (upland)	761.34	687.00	727.48
Maize	31,812.86	27,944.78	40,964.62
Wheat	2,601.91	2,456.56	1,623.24
Barley	1,841.16	1,763.96	1,123.39
Millet	2,847.90	2,690.03	1,613.11
Buckwheat	5,290.24	4,948.98	2,700.67
Quinoa	273.05	223.32	102.08
TOTAL	76,883.86	71,356.05	102,215.52

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 – 2.9 present different cereal production by type and by dzongkhag.

Figure 2.1 gives the distribution of irrigated paddy and maize production, by dzongkhag in 2020. Among cereal crops, paddy and maize are the major cereal crops in the country. A total of 53,361 MT of irrigated paddy and 40,965 MT of maize were produced in 2020.

Across the dzongkhag, Punakha (about 15 percent), Paro (about 15 percent) and Wangdue Phodrang (about 11 percent) recorded the highest production of irrigated paddy, while Trashigang (about 17 percent), Monggar (about 15 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 15 percent), Dzomi (about 15 percent) and Shelnga-Bjemi (about 13 percent) gewogs account for the highest production. In Paro dzongkhag, Lamgong (about 21 percent), Dopshar-ri (about 20 percent) and Wangchang (about 14 percent) gewogs recorded for the highest production.

Figure 2.3 shows the total maize production by Monggar and Trashigang dzongkhags. In Monggar dzongkhag, Chagsakhar (about 11 percent), Chhaling (about 11 percent) and Saling (about 10 percent) gewogs account for the highest production. In Trashigang dzongkhag, Shongphu (about 17 percent), Udzorong (about 13 percent) and Yangnyer (about 12 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 11 percent), Samtse (about 10 percent) and Wangdue Phodrang (about 10 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, Punakha and Wangdue Phodrang received majority contribution from wheat, while Gasa, Monggar and Trongsa received from barley. On the other hand, Lhuentse, Samtse, Sarpang, Tsirang and Trashi Yangtse received more contribution from millet, while Bumthang, Chhukha, Dagana, Haa, Samdrup Jongkhar, Trashigang and Zhemgang received more contribution from Buckwheat. The total other cereal production in 2020 was 7,163 MT including quinoa production.

Quinoa, which is yet another new crop introduced by the Ministry in 2015 to enhance the food and nutritional security of the Bhutanese people is picking up its production. Chart 2.1 shows the quinoa production by dzongkhag. A total of about 102 MT of quinoa was produced in 2020. Across the dzongkhag, Trashigang (about 29 percent), Samtse (about 19 percent) and Monggar (about 18 percent) recorded the highest production of quinoa.

Chart 2. 1 Quinoa production (MT) by dzongkhag, 2020

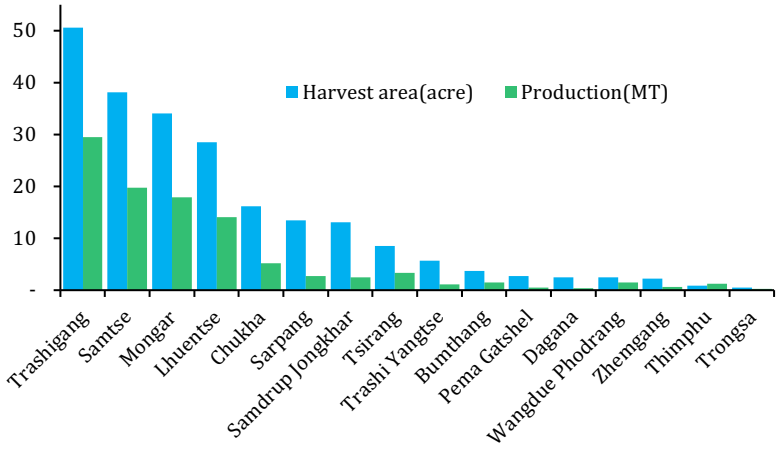


Figure 2. 1 Share of irrigated paddy and maize produciton by dzongkhag, 2020

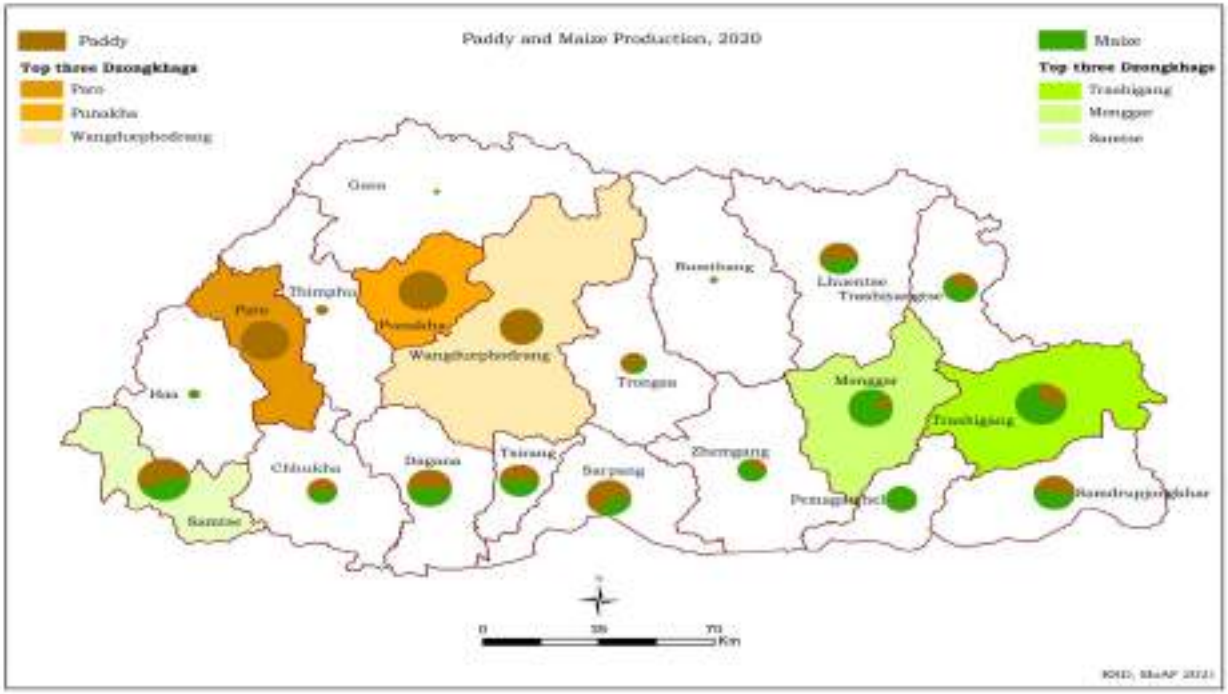


Figure 2. 2 Irrigated paddy production (MT) by Punakha and Paro dzongkhags

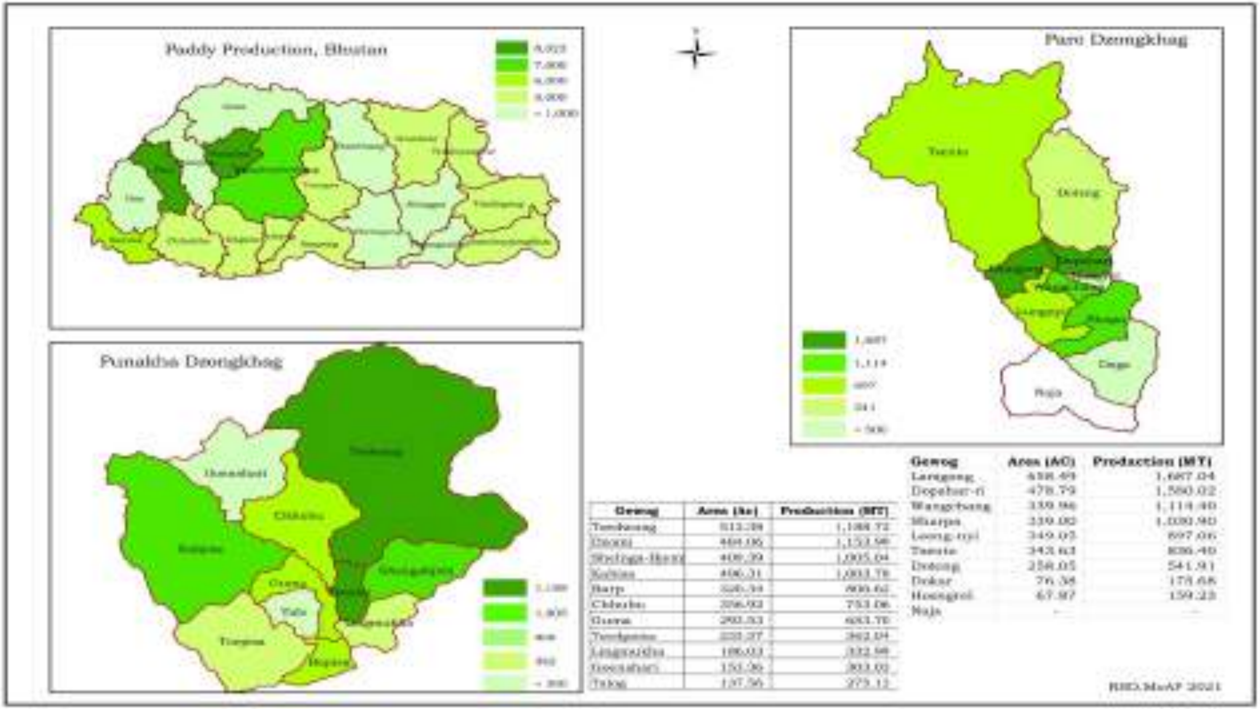


Figure 2. 3 Maize production (MT) by Monggar and Trashigang dzongkhags, 2020

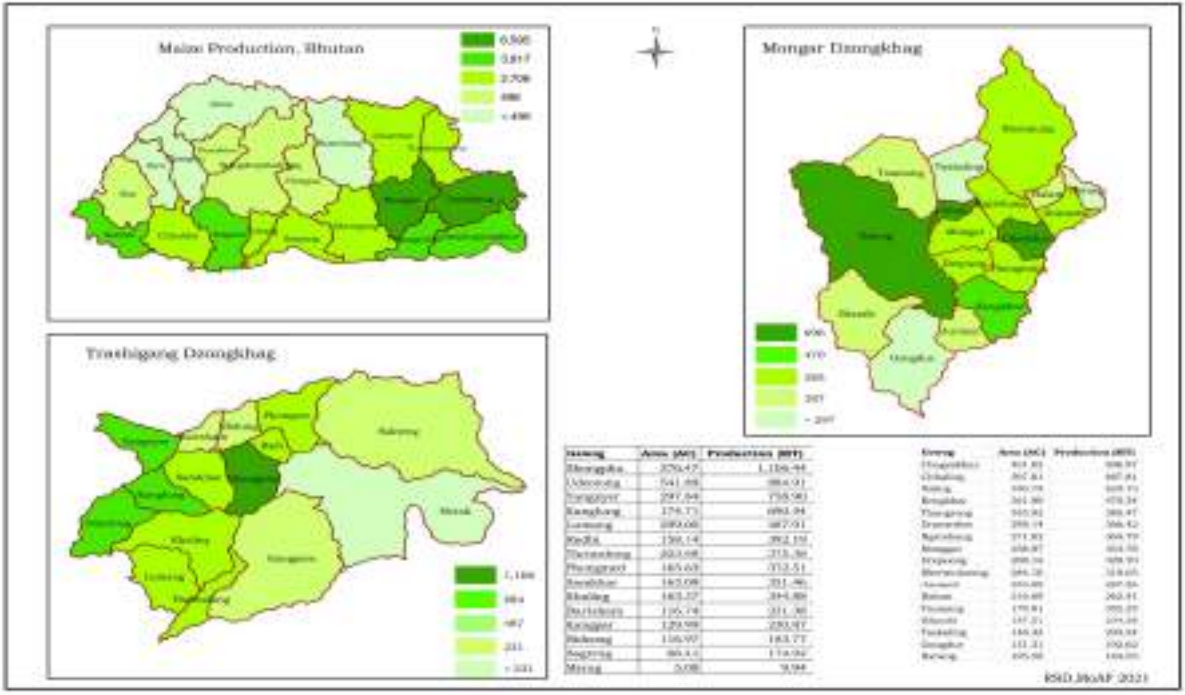


Figure 2. 4 Share of other cereal production by dzongkhag, 2020

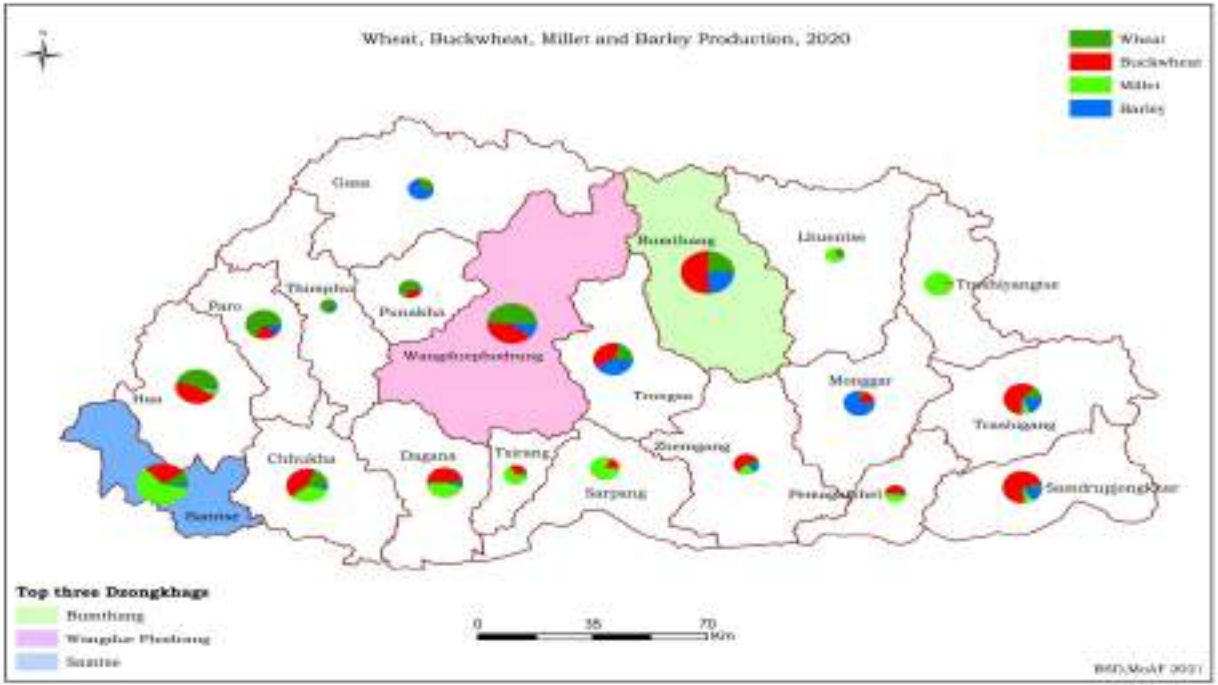


Table 2. 2 Irrigated paddy production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Irrigated paddy)		
Bumthang	135.68	134.59	207.97
Chhukha	1,038.00	926.74	1,613.86
Dagana	2,617.70	2,550.07	3,461.71
Gasa	89.55	89.53	121.57
Haa	104.77	97.43	115.15
Lhuntse	1,520.29	1,481.78	2,791.12
Monggar	652.76	622.01	746.23
Paro	2,892.41	2,913.30	8,022.65
Pema Gatshel	30.24	26.94	37.70
Punakha	3,520.98	3,583.44	7,838.10
Samdrup Jongkhar	1,638.49	1,632.24	2,634.73
Samtse	4,378.52	4,250.17	5,475.48
Sarpang	3,400.18	3,218.42	4,560.91
Thimphu	223.11	221.78	515.11
Trashigang	1,355.74	1,305.55	2,252.98
Trashi Yangtse	926.45	890.40	1,710.40
Trongsa	1,129.54	1,064.01	1,711.86
Tsirang	2,117.77	2,062.72	2,660.76
Wangdue Phodrang	3,005.28	2,926.14	6,110.44
Zhemgang	677.96	644.12	772.20
TOTAL	31,455.40	30,641.42	53,360.93

Table 2. 3 Upland paddy production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Upland paddy)		
Bumthang	-	-	-
Chhukha	37.56	33.27	25.73
Dagana	31.67	31.67	42.22
Gasa	-	-	-
Haa	3.76	2.27	1.83
Lhuntse	99.68	91.41	92.07
Monggar	47.22	39.83	30.45
Paro	5.17	5.17	11.16
Pema Gatshel	11.19	9.00	5.17
Punakha	14.47	14.47	21.04
Samdrup Jongkhar	48.84	39.17	22.44
Samtse	109.46	98.83	105.83
Sarpang	19.84	17.86	20.55
Thimphu	-	-	-
Trashigang	99.44	87.95	114.36
Trashi Yangtse	123.21	116.02	121.18
Trongsa	11.00	10.66	17.01
Tsirang	4.17	4.17	3.04
Wangdue Phodrang	27.65	25.99	39.78
Zhemgang	67.01	59.26	53.61
TOTAL	761.34	687.00	727.48

Table 2. 4 Maize production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Maize)		
Bumthang	1.16	0.70	0.40
Chhukha	1,530.97	1,219.51	1,509.06
Dagana	3,330.69	3,019.56	3,374.84
Gasa	1.91	1.76	1.28
Haa	266.61	232.93	329.06
Lhuntse	1,512.51	1,399.80	2,357.91
Monggar	4,855.02	4,413.99	6,162.32
Paro	41.19	39.44	24.50
Pema Gatshel	2,521.84	2,165.57	3,436.34
Punakha	127.68	121.15	173.12
Samdrup Jongkhar	2,448.82	2,274.45	3,140.79
Samtse	3,687.47	3,226.04	3,917.47
Sarpang	2,165.74	1,758.41	2,132.23
Thimphu	2.07	2.07	2.85
Trashigang	3,494.86	2,979.02	6,595.87
Trashi Yangtse	1,109.33	1,011.90	2,383.89
Trongsa	388.31	286.02	496.85
Tsirang	2,470.84	2,148.15	2,706.84
Wangdue Phodrang	129.47	105.72	192.00
Zhemgang	1,726.36	1,538.57	2,026.99
TOTAL	31,812.86	27,944.78	40,964.62

Table 2. 5 Wheat production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
		(Wheat)	
Bumthang	289.21	273.70	191.06
Chhukha	169.92	163.80	96.49
Dagana	23.50	21.89	9.48
Gasa	82.64	82.64	52.83
Haa	437.16	381.48	234.35
Lhuntse	17.53	15.53	11.19
Monggar	9.11	8.27	4.33
Paro	376.56	366.86	245.92
Pema Gatshel	15.75	13.77	6.62
Punakha	192.34	189.44	100.50
Samdrup Jongkhar	37.33	31.67	19.69
Samtse	128.86	120.15	71.85
Sarpang	3.11	3.11	1.36
Thimphu	83.20	80.22	60.80
Trashigang	77.16	69.85	60.71
Trashi Yangtse	1.47	1.47	1.08
Trongsa	155.88	144.00	90.39
Tsirang	14.35	13.40	8.29
Wangdue Phodrang	458.33	446.80	342.60
Zhemgang	28.52	28.52	13.73
TOTAL	2,601.91	2,456.56	1,623.24

Table 2. 6 Barley production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Barley)		
Bumthang	293.51	261.59	182.86
Chhukha	29.28	28.60	18.16
Dagana	42.46	42.46	17.81
Gasa	127.90	127.90	137.91
Haa	26.62	21.83	13.93
Lhuntse	6.50	5.24	3.33
Monggar	480.71	470.52	215.54
Paro	72.81	71.52	43.14
Pema Gatshel	9.18	8.36	4.35
Punakha	13.67	13.67	7.45
Samdrup Jongkhar	106.74	106.37	69.06
Samtse	41.37	37.95	20.84
Sarpang	-	-	-
Thimphu	21.18	19.47	13.39
Trashigang	92.39	84.99	74.54
Trashi Yangtse	4.27	4.27	1.94
Trongsa	289.46	280.22	185.58
Tsirang	6.67	6.58	2.69
Wangdue Phodrang	149.32	145.72	85.09
Zhemgang	27.13	26.71	25.78
TOTAL	1,841.16	1,763.96	1,123.39

Table 2. 7 Millet production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Millet)		
Bumthang	-	-	-
Chhukha	456.73	438.87	173.48
Dagana	350.19	339.47	166.58
Gasa	-	-	-
Haa	63.14	56.04	30.99
Lhuntse	114.73	112.20	78.77
Monggar	13.68	12.81	4.67
Paro	4.34	4.34	1.84
Pema Gatshel	129.69	124.62	66.31
Punakha	0.79	0.71	0.20
Samdrup Jongkhar	60.47	59.22	31.56
Samtse	648.95	611.46	443.59
Sarpang	413.03	353.78	192.37
Thimphu	-	-	-
Trashigang	58.04	53.83	32.11
Trashi Yangtse	209.26	206.12	232.82
Trongsa	4.79	4.69	2.70
Tsirang	221.94	217.21	107.51
Wangdue Phodrang	7.25	7.20	3.58
Zhemgang	90.87	87.47	44.02
TOTAL	2,847.90	2,690.03	1,613.11

Table 2. 8 Buckwheat production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Buckwheat)		
Bumthang	651.93	583.64	420.95
Chhukha	476.00	430.43	201.29
Dagana	340.26	340.99	178.24
Gasa	9.93	9.93	7.68
Haa	509.90	471.82	237.26
Lhuntse	14.27	13.89	8.20
Monggar	147.08	138.21	55.33
Paro	137.20	136.68	77.16
Pema Gatshel	180.58	168.17	61.10
Punakha	78.57	74.96	41.10
Samdrup Jongkhar	604.84	591.05	323.63
Samtse	396.40	370.43	198.05
Sarpang	131.86	131.27	42.01
Thimphu	5.28	5.28	2.65
Trashigang	325.10	271.51	249.06
Trashi Yangtse	13.86	12.25	5.55
Trongsa	379.30	332.47	170.23
Tsirang	121.70	118.10	42.81
Wangdue Phodrang	488.18	480.97	267.40
Zhemgang	277.99	266.94	110.97
TOTAL	5,290.24	4,948.98	2,700.67

Table 2. 9 Quinoa production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
		(Quinoa)	
Bumthang	3.73	3.73	1.49
Chhukha	17.08	16.17	5.25
Dagana	2.72	2.53	0.41
Gasa	-	-	-
Haa	-	-	-
Lhuntse	28.47	28.47	14.04
Monggar	47.34	34.05	17.94
Paro	-	-	-
Pema Gatshel	7.42	2.78	0.51
Punakha	-	-	-
Samdrup Jongkhar	22.01	13.10	2.43
Samtse	40.03	38.17	19.80
Sarpang	14.33	13.50	2.77
Thimphu	0.87	0.87	1.21
Trashigang	58.08	50.64	29.48
Trashi Yangtse	10.53	5.67	1.06
Trongsa	3.91	0.44	0.25
Tsirang	11.76	8.50	3.34
Wangdue Phodrang	2.49	2.42	1.53
Zhemgang	2.27	2.27	0.58
TOTAL	273.05	223.32	102.08

3

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 pulses production by dzongkhag, and by type

Table 3.1 shows the total Oilseeds and pulses production by type in 2020. A total of about 2,961 MT of Oilseeds and pulses were produced.

Table 3. 1 Total oilseeds and pulses production by type, 2020

Type	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Mustard	1,803.89	1,746.28	537.81
Sunflower	12.11	10.86	7.97
Soya bean	576.46	540.11	233.60
Groundnut	299.21	273.67	313.27
Perilla	178.91	177.41	61.28
Beans (dry)	907.60	874.74	485.29
Rajmabeans	1,661.44	1,593.96	849.68
Mungbeans	1,166.01	1,083.98	381.77
Lentil	361.46	342.47	90.59
TOTAL	6,967.09	6,643.48	2,961.26

The common oilseeds and pulses grown in the country are mustard, sunflower, groundnut, soyabeans, beans dry, lentil, rajmabeans and mungbeans. Table 3.2 – 3.9 present the detailed oilseeds and pulses production by type and by dzongkhag.

Among the various oilseeds and pulses, rajmabeans, mungbeans, beans dry and mustard are the most commonly grown by the farmers in the country. Chart 3.1 presents rajmabeans and mungbeans production by dzongkhag in 2020. From the total of 850 MT of rajmabeans produced, Mongar (about 27 percent), Samdrup Jongkhar (about 19 percent) and Trashigang (abour 17 percent) dzongkhags account for the highest production. In terms of the mungbeans production, Dagana dzongkhag alone accounts for almost 37 percent of the total production.

Chart 3.2 provides mustard production by dzongkhag in 2020. Across the dzongkhag, Samtse (about 18 percent) and Dagana (about 11 percent) dzongkhags account for the highest production.

Chart 3. 1 Rajma beans and Mung beans productin (MT) by dzongkhag, 2020

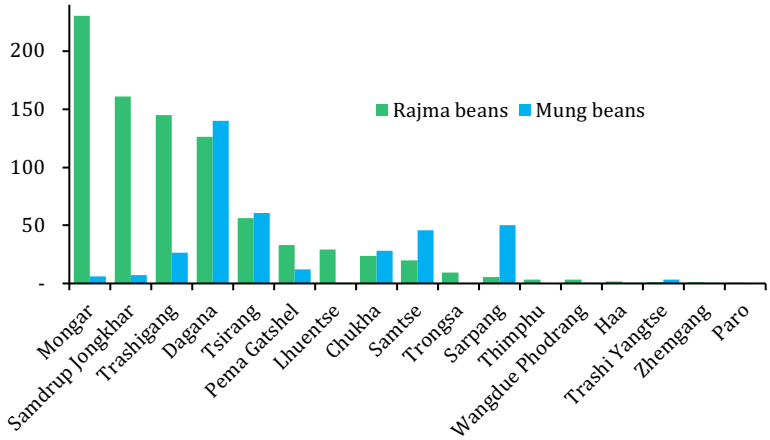


Chart 3. 2 Mustard production (MT) by dzongkhag, 2020

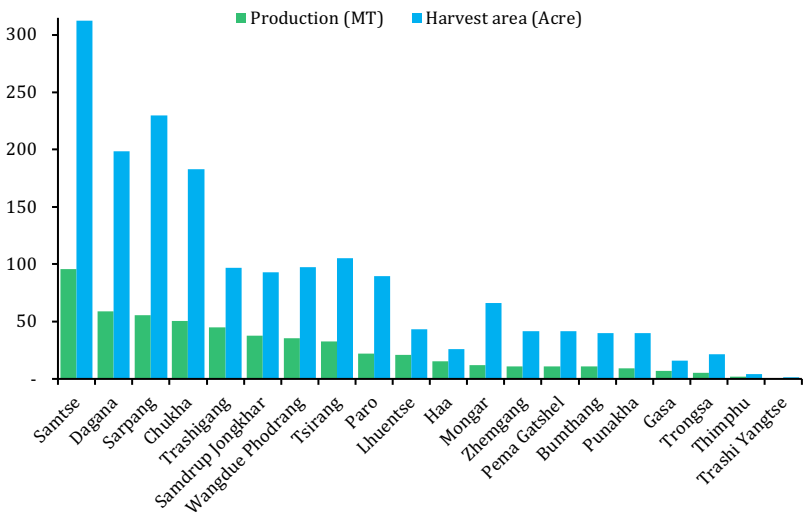


Table 3. 2 Mustard production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
		(Mustard)	
Bumthang	41.71	39.89	10.83
Chhukha	185.74	182.91	50.51
Dagana	201.42	198.74	58.79
Gasa	15.90	15.90	6.72
Haa	28.00	26.09	15.29
Lhuntse	44.25	43.12	21.12
Monggar	67.06	66.46	12.28
Paro	91.32	89.55	22.06
Pema Gatshel	43.58	41.46	11.03
Punakha	40.64	39.69	8.97
Samdrup Jongkhar	93.60	92.79	37.51
Samtse	325.66	312.24	95.53
Sarpang	243.91	229.97	55.58
Thimphu	4.17	4.17	1.87
Trashigang	100.88	96.66	44.81
Trashi Yangtse	1.32	1.30	0.22
Trongsa	22.34	21.31	5.09
Tsirang	105.86	105.10	32.93
Wangdue Phodrang	103.88	97.58	35.62
Zhemgang	42.64	41.35	11.06
TOTAL	1,803.89	1,746.28	537.81

Table 3. 3 Sunflower production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Sunflower)		
Bumthang	6.82	6.82	5.18
Chhukha	-	-	-
Dagana	0.06	0.06	0.01
Gasa	-	-	-
Haa	0.28	0.28	0.14
Lhuntse	0.54	0.54	0.22
Monggar	-	-	-
Paro	-	-	-
Pema Gatshel	-	-	-
Punakha	-	-	-
Samdrup Jongkhar	-	-	-
Samtse	0.57	0.57	0.10
Sarpang	-	-	-
Thimphu	-	-	-
Trashigang	1.97	1.97	1.69
Trashi Yangtse	-	-	-
Trongsa	-	-	-
Tsirang	1.87	0.62	0.62
Wangdue Phodrang	-	-	-
Zhemgang	-	-	-
TOTAL	12.11	10.86	7.97

Table 3. 4 Soya bean production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Soya bean)		
Bumthang	-	-	-
Chhukha	26.80	26.58	6.08
Dagana	28.74	28.13	7.18
Gasa	-	-	-
Haa	-	-	-
Lhuntse	64.61	63.87	24.91
Monggar	6.20	6.08	11.05
Paro	-	-	-
Pema Gatshel	95.91	91.11	30.58
Punakha	0.07	0.07	0.05
Samdrup Jongkhar	40.98	37.31	11.46
Samtse	15.15	13.92	4.43
Sarpang	19.37	18.24	4.84
Thimphu	-	-	-
Trashigang	138.43	120.20	84.81
Trashi Yangtse	70.35	66.18	20.48
Trongsa	11.00	11.00	3.64
Tsirang	40.91	39.70	16.47
Wangdue Phodrang	5.45	5.39	5.05
Zhemgang	12.50	12.33	2.58
TOTAL	576.46	540.11	233.60

Table 3. 5 Groundnut production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Groundnut)		
Bumthang	-	-	-
Chhukha	-	-	-
Dagana	13.72	13.42	4.23
Gasa	-	-	-
Haa	-	-	-
Lhuntse	3.30	3.30	2.07
Monggar	10.60	9.82	10.46
Paro	-	-	-
Pema Gatshel	76.68	68.61	43.84
Punakha	6.41	6.41	5.85
Samdrup Jongkhar	1.03	0.91	0.63
Samtse	0.06	0.06	0.05
Sarpang	1.98	1.63	0.79
Thimphu	-	-	-
Trashigang	115.67	103.47	208.21
Trashi Yangtse	61.31	57.80	32.74
Trongsa	0.16	0.05	0.20
Tsirang	5.67	5.67	3.51
Wangdue Phodrang	0.53	0.53	0.16
Zhemgang	2.09	2.00	0.52
TOTAL	299.21	273.67	313.27

Table 3. 6 Perilla production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Perilla)		
Bumthang	-	-	-
Chhukha	1.20	1.20	0.19
Dagana	4.49	4.49	1.14
Gasa	-	-	-
Haa	-	-	-
Lhuntse	17.06	17.04	7.28
Monggar	-	-	-
Paro	-	-	-
Pema Gatshel	49.92	49.66	11.23
Punakha	1.54	1.54	0.61
Samdrup Jongkhar	6.81	6.81	5.13
Samtse	0.10	0.10	0.16
Sarpang	3.54	3.36	0.98
Thimphu	-	-	-
Trashigang	51.77	51.12	22.72
Trashi Yangtse	3.24	3.24	0.84
Trongsa	5.57	5.57	0.89
Tsirang	0.14	0.14	0.03
Wangdue Phodrang	0.97	0.97	0.30
Zhemgang	32.55	32.16	9.79
TOTAL	178.91	177.41	61.28

Table 3. 7 Beans dry production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Beans dry)		
Bumthang	-	-	-
Chhukha	28.09	27.66	12.08
Dagana	125.87	122.76	55.54
Gasa	1.76	1.76	1.55
Haa	7.14	6.97	4.87
Lhuntse	37.62	37.36	13.97
Monggar	141.34	140.62	81.50
Paro	6.64	6.64	4.48
Pema Gatshel	77.75	72.18	40.77
Punakha	0.05	0.05	0.12
Samdrup Jongkhar	23.45	23.45	15.80
Samtse	99.63	95.73	42.78
Sarpang	119.53	114.08	47.67
Thimphu	0.21	0.21	0.74
Trashigang	91.51	80.34	97.35
Trashi Yangtse	10.54	10.32	3.92
Trongsa	-	-	-
Tsirang	134.54	132.68	60.70
Wangdue Phodrang	0.73	0.73	0.86
Zhemgang	1.19	1.19	0.59
TOTAL	907.60	874.74	485.29

Table 3. 8 Rajma beans production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Rajma beans)		
Bumthang	-	-	-
Chhukha	39.57	38.79	23.91
Dagana	359.49	335.54	126.27
Gasa	-	-	-
Haa	1.86	1.76	1.82
Lhuntse	39.82	36.57	29.28
Monggar	396.72	388.52	230.38
Paro	0.43	0.43	0.54
Pema Gatshel	81.96	73.07	32.84
Punakha	-	-	-
Samdrup Jongkhar	188.52	187.28	160.81
Samtse	38.64	37.84	19.64
Sarpang	16.17	16.12	5.26
Thimphu	1.05	1.05	3.16
Trashigang	363.99	347.76	144.83
Trashi Yangtse	2.17	2.17	1.35
Trongsa	5.04	5.01	9.61
Tsirang	118.56	114.84	56.01
Wangdue Phodrang	3.69	3.59	3.06
Zhemgang	3.76	3.63	0.91
TOTAL	1,661.44	1,593.96	849.68

Table 3. 9 Mung beans production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Mung beans)		
Bumthang	-	-	-
Chhukha	108.97	101.97	27.88
Dagana	470.27	442.71	139.84
Gasa	-	-	-
Haa	0.13	0.13	0.14
Lhuntse	0.95	0.95	0.46
Monggar	15.99	15.99	6.33
Paro	-	-	-
Pema Gatshel	34.17	33.21	11.94
Punakha	-	-	-
Samdrup Jongkhar	16.01	15.01	7.36
Samtse	120.92	116.34	45.66
Sarpang	196.63	159.09	50.45
Thimphu	-	-	-
Trashigang	47.05	46.99	26.58
Trashi Yangtse	15.58	15.48	3.57
Trongsa	-	-	-
Tsirang	134.32	131.29	60.67
Wangdue Phodrang	0.49	0.49	0.12
Zhemgang	4.52	4.34	0.78
TOTAL	1,166.01	1,083.98	381.77

Table 3. 10 Lentil production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Lentil)		
Bumthang	-	-	-
Chhukha	84.36	81.57	15.10
Dagana	9.91	8.19	1.82
Gasa	-	-	-
Haa	0.08	0.08	0.03
Lhuntse	-	-	-
Monggar	-	-	-
Paro	-	-	-
Pema Gatshel	10.67	9.12	3.91
Punakha	-	-	-
Samdrup Jongkhar	61.73	59.01	14.17
Samtse	115.42	108.70	33.97
Sarpang	21.25	18.93	5.35
Thimphu	-	-	-
Trashigang	1.76	1.12	0.93
Trashi Yangtse	1.67	1.67	0.23
Trongsa	-	-	-
Tsirang	53.87	53.39	15.03
Wangdue Phodrang	0.51	0.51	0.04
Zhemgang	0.23	0.18	0.02
TOTAL	361.46	342.47	90.59

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 2020. A total of about 57,727 MT of vegetables were produced. The major vegetables grown in the country are turnip, cabbage, cauliflower, and chilli. Chart 4.1 shows turnip production by dzongkhag in 2020. Among the vegetables, the production of turnip was recorded the highest with 10,385 MT, of which, Wangdue Phodrang (about 63 percent), Haa (about 15 percent) and Bumthang (about 6 percent) dzongkhags account for the highest production. Turnip is not consumed as prominent as that of other vegetables, it is used as non-traditional crop for livestock as forage supplies in many dzongkhags.

Chart 4. 1 Turnip production (MT) by dzongkhag, 2020

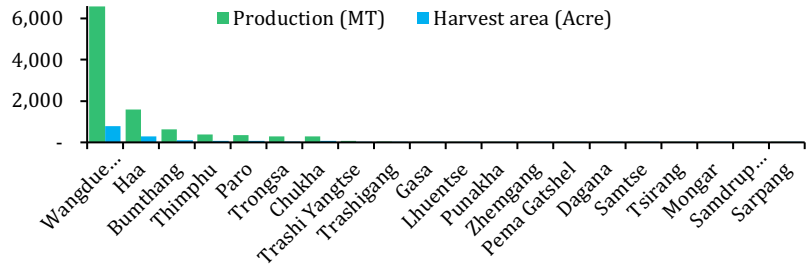


Table 4. 1 Total vegetable and spices production by type, 2020

	Type	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Vegetables	Asparagus	207.17	206.43	126.62
	Broccoli	1,130.82	1,107.07	1,726.75
	Cabbage	2,425.07	2,071.55	7,829.57
	Cauliflower	1,228.00	1,198.08	2,447.80
	Chilli	4,056.09	3,765.34	9,332.93
	Garlic leaves			248.57
	Green leaves			3,531.08
	Onion bulb	204.43	202.8	216.29
	Spring/bunching onion	307.19	307.03	268.33
	Eggplant	310.13	301.1	429.15
	Tomato	262.1	245.9	358.75
	Pumpkins, squash & gourds			7,917.54
	Cucumber	454.07	448.74	1,969.72
	Carrot	713.86	677.17	1,787.48
	Raddish	2,422.21	2,405.67	5,233.93
	Turnip	1,587.60	1,584.40	10,384.76
	Peas (green/fresh)	625.37	603.2	749.41
	Beans (green/fresh)	2,620.64	2,543.62	3,168.51
	TOTAL VEGETABLES	**18,554.75**	**17,668.10**	**57,727.19**
Spices	Ginger	3,842.86	3,720.66	8,890.06
	Turmeric	155.9	155.73	186.72
	Garlic	576.38	570.4	690.98
	Cardamom	13,977.61	13,695.64	2,174.85
	Coriander	295.22	295.14	300.61
	TOTAL SPICES	**18,847.97**	**18,437.57**	**12,243.22**

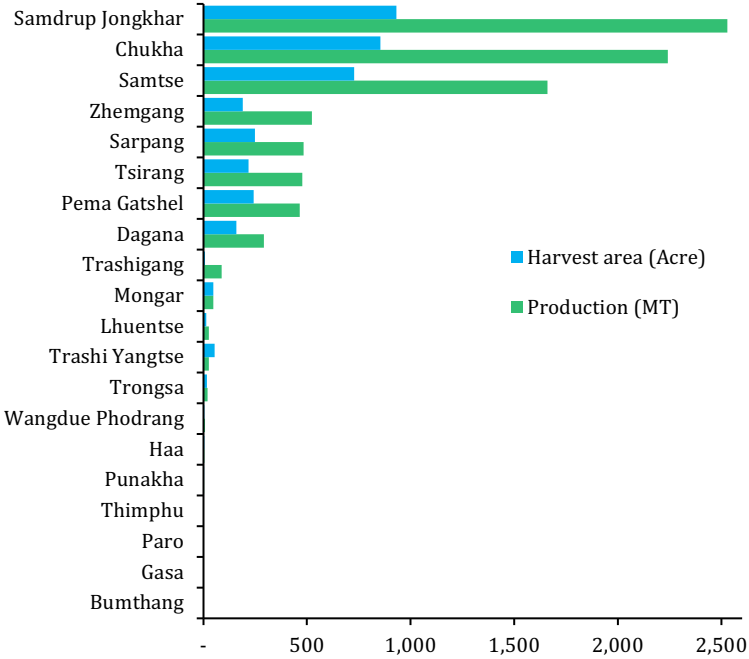
Figure 4.1 gives the distribution share of major vegetable (viz. cabbage, cauliflower, chilli, beans and broccoli) production in the country by dzongkag. A total of 25,506 MT of major vegetables were produced. The dzongkhags that produce major vegetables are Paro (about 21 percent), Wangdue Phodrang (about 8 percent), Trashigang (about 7 percent), Trashi Yangtse (about 7 percent), Monggar (about 7 percent), and Punakha (about 6 percent).

In terms of the individual contribution to the total major vegetables, the production share of cabbage was more from Paro, Wangdue Phodrang and Monggar, while for cauliflower, its contribution was more from Tsirang, Sarpang and Dagana. Similarly, the contribution of chilli to the total major vegetable production was recorded from Paro, Punakha and Lhuentse. For beans, it was more from Paro, Sarpang and Trashigang, while for broccoli, the share was more in Monggar, Tsirang and Trashi Yangtse.

A total of 9,333 MT of chillies was produced and the highest production came from Paro (about 18 percent), Lhuentse (about 10 percent) and Punakha (about 10 percent). Figure 4.2 presents chilli production by Paro and Punakha dzongkhags. In Paro, Nagya (about 21 percent), Dokar (about 21 percent) and Lamgong (about 15 percent) gewogs account for the highest production.

A total of 12,243 MT of spices were produced. Chart 4.2 shows ginger production by dzongkhag in 2020. Among the spices, ginger is the major among others and the highest ginger production was recorded in Samdrup Jongkhar (about 28 percent), Chhukha (about 25 percent) and Samtse (about 19 percent). The production of different vegetables and spices by dzongkhag and by type are presented in Table 4.2 – 4.24.

Chart 4. 2 Ginger production (MT) by dzongkhag, 2020



Cardamom, on the other hand, is one of the major spices grown in the country. The highest production was recorded in Samtse (about 25 percent) and Chhukha (about 14 percent) dzongkhags. Figure 4.3 gives the production of cardamom by Samtse and Chhukha dzongkhags, 2020. In Samtse, Tendruk (about 25 percent), Norgaygang (about 20 percent) and Duenchhukha (about 19 percent) gewogs account for the highest production.

Figure 4. 1 Major vegetable production by dzongkhag, 2020

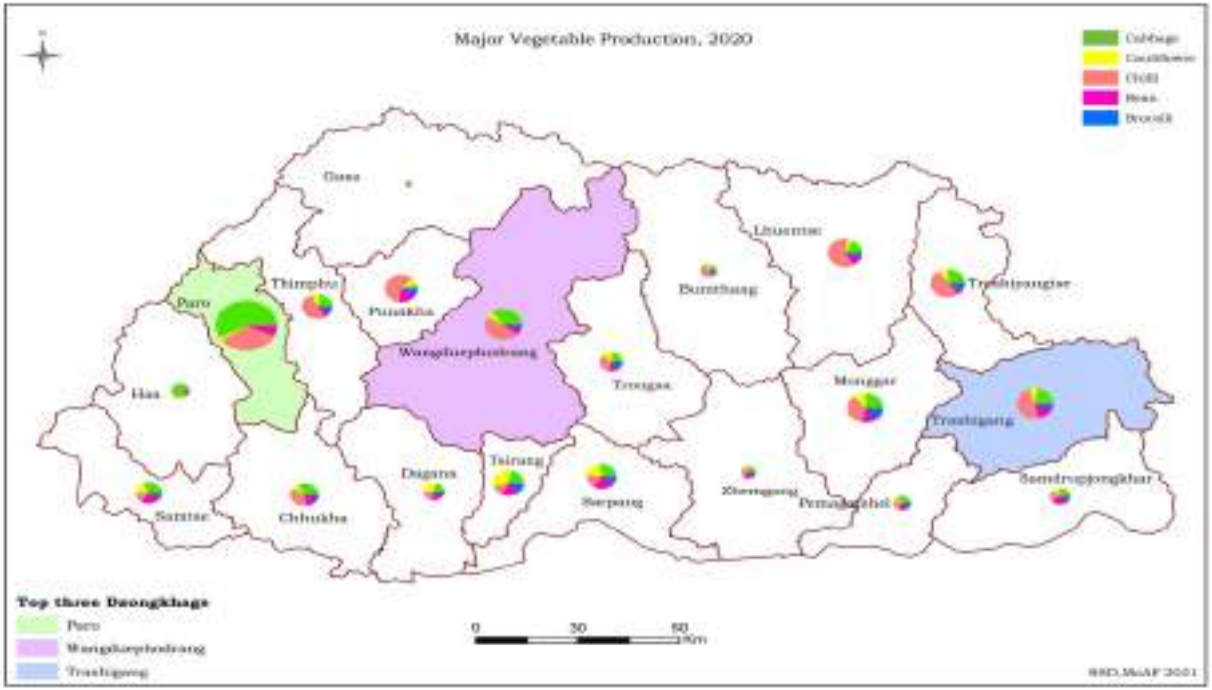


Figure 4. 2 Chilli production (MT) by Paro and Lhuentse dzongkhags, 2020

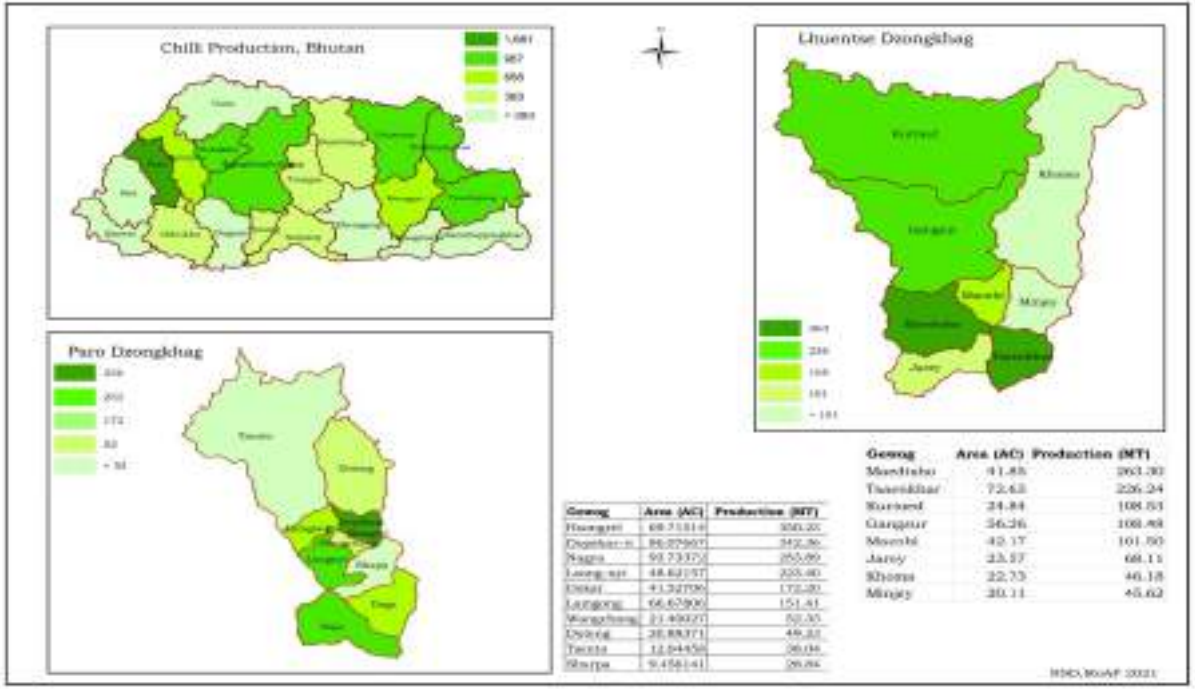


Figure 4. 1 Cardamom production (MT) by Samtse and Chhukha dzongkhags, 2020

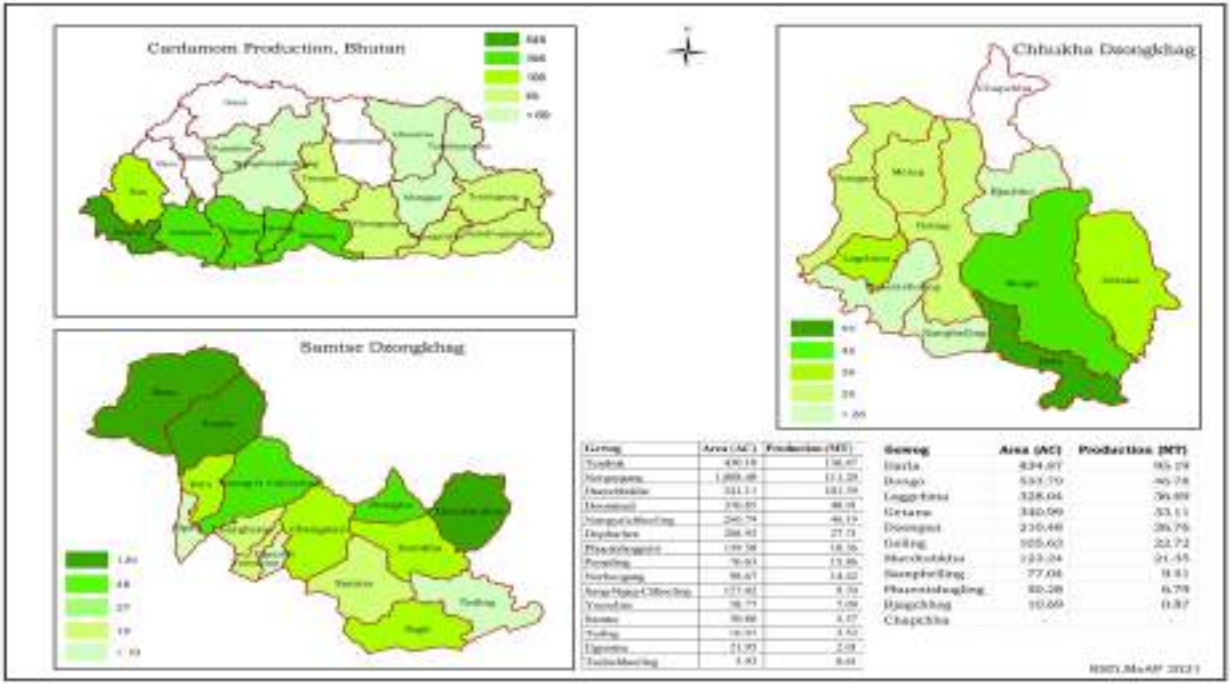


Table 4. 2 Asparagus production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Asparagus)		
Bumthang	2.25	2.25	1.30
Chhukha	0.71	0.71	0.17
Dagana	4.98	4.86	0.53
Gasa	0.37	0.59	0.36
Haa	2.12	2.12	1.51
Lhuntse	3.88	3.88	0.75
Monggar	7.73	7.73	0.40
Paro	105.79	105.01	88.54
Pema Gatshel	3.12	3.05	1.46
Punakha	5.01	5.01	1.04
Samdrup Jongkhar	1.33	1.33	0.28
Samtse	1.88	1.88	0.25
Sarpang	0.02	0.02	0.00
Thimphu	24.51	24.51	13.60
Trashigang	16.67	16.67	8.43
Trashi Yangtse	9.82	9.82	2.62
Trongsa	9.93	9.93	3.97
Tsirang	2.76	2.76	0.23
Wangdue Phodrang	3.87	3.87	0.91
Zhemgang	0.42	0.42	0.28
TOTAL	207.17	206.43	126.62

Table 4. 3 Broccoli production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
		(Broccoli)	
Bumthang	11.63	11.63	36.52
Chhukha	63.22	61.68	68.33
Dagana	54.64	54.32	68.22
Gasa	6.64	6.64	10.87
Haa	8.23	8.15	15.20
Lhuntse	35.39	34.85	83.30
Monggar	152.40	147.65	243.44
Paro	18.05	18.05	35.93
Pema Gatshel	40.11	38.74	42.86
Punakha	68.92	67.90	129.24
Samdrup Jongkhar	52.14	52.00	63.10
Samtse	76.12	75.32	92.22
Sarpang	73.98	73.23	110.39
Thimphu	66.17	63.97	109.60
Trashigang	85.00	77.83	102.89
Trashi Yangtse	73.97	72.99	147.36
Trongsa	50.02	49.75	98.44
Tsirang	133.45	132.26	165.92
Wangdue Phodrang	41.45	40.85	77.71
Zhemgang	19.30	19.26	25.21
TOTAL	1,130.82	1,107.07	1,726.75

Table 4. 4 Cabbage production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
		(Cabbage)	
Bumthang	19.37	19.37	74.84
Chhukha	153.99	122.35	342.32
Dagana	87.25	84.17	131.09
Gasa	7.92	7.92	22.85
Haa	83.54	82.59	343.96
Lhuntse	74.07	73.41	271.75
Monggar	201.86	193.02	425.17
Paro	450.78	346.46	2,935.12
Pema Gatshel	95.99	82.77	145.93
Punakha	36.58	35.49	73.07
Samdrup Jongkhar	96.58	96.32	144.67
Samtse	182.51	166.99	310.55
Sarpang	123.81	120.58	336.19
Thimphu	97.63	49.82	278.50
Trashigang	234.18	142.68	398.97
Trashi Yangtse	126.35	118.83	406.44
Trongsa	46.49	46.24	165.51
Tsirang	160.27	152.39	284.01
Wangdue Phodrang	109.56	96.75	655.19
Zhemgang	36.36	33.40	83.45
TOTAL	2,425.07	2,071.55	7,829.57

Table 4. 5 Cauliflower production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Cauliflower)		
Bumthang	10.14	10.14	30.71
Chhukha	64.01	62.29	90.88
Dagana	96.71	93.73	197.43
Gasa	8.33	8.33	15.63
Haa	9.66	9.60	21.96
Lhuntse	30.79	30.12	93.37
Monggar	105.40	105.49	191.95
Paro	33.42	33.09	113.44
Pema Gatshel	39.02	38.30	35.42
Punakha	55.48	54.15	120.72
Samdrup Jongkhar	54.42	54.42	72.07
Samtse	100.75	98.53	157.81
Sarpang	93.74	90.83	240.77
Thimphu	28.94	25.81	121.26
Trashigang	89.57	79.91	136.89
Trashi Yangtse	71.65	69.72	152.86
Trongsa	38.20	38.13	103.08
Tsirang	235.75	233.95	411.82
Wangdue Phodrang	50.75	50.26	122.67
Zhemgang	11.28	11.28	17.04
TOTAL	1,228.00	1,198.08	2,447.80

Table 4. 6 Chilli production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
		(Chilli)	
Bumthang	59.42	58.65	222.47
Chhukha	224.55	198.43	393.01
Dagana	143.02	135.37	147.65
Gasa	11.53	11.53	19.76
Haa	26.25	25.92	57.50
Lhuntse	327.12	304.16	967.95
Monggar	405.39	367.49	624.08
Paro	473.94	470.14	1,661.95
Pema Gatshel	119.97	108.23	93.96
Punakha	257.11	231.85	888.92
Samdrup Jongkhar	118.07	114.22	126.17
Samtse	131.54	128.79	146.97
Sarpang	181.75	168.73	220.63
Thimphu	130.47	126.73	658.67
Trashigang	447.98	402.27	870.26
Trashi Yangtse	300.59	270.67	817.84
Trongsa	116.39	105.56	257.29
Tsirang	175.26	169.08	201.28
Wangdue Phodrang	358.80	331.78	861.30
Zhemgang	46.93	35.74	95.27
TOTAL	4,056.09	3,765.34	9,332.93

Table 4. 7 Garlic leaves production by dzongkhag, 2020

Dzongkhag	Production (MT)
Bumthang	0.23
Chhukha	2.10
Dagana	4.11
Gasa	3.55
Haa	0.53
Lhuntse	15.11
Monggar	35.51
Paro	2.11
Pema Gatshel	7.81
Punakha	8.87
Samdrup Jongkhar	13.43
Samtse	13.50
Sarpang	3.23
Thimphu	4.14
Trashigang	66.50
Trashi Yangtse	17.24
Trongsa	9.16
Tsirang	20.19
Wangdue Phodrang	20.39
Zhemgang	0.86
TOTAL	248.57

Table 4. 8 Green leaves production by dzongkhag, 2020

Dzongkhag	Production (MT)
Bumthang	30.21
Chhukha	288.99
Dagana	190.42
Gasa	29.35
Haa	69.64
Lhuntse	89.65
Monggar	189.62
Paro	49.78
Pema Gatshel	153.52
Punakha	82.41
Samdrup Jongkhar	255.83
Samtse	638.59
Sarpang	182.36
Thimphu	126.29
Trashigang	369.72
Trashi Yangtse	144.97
Trongsa	88.09
Tsirang	293.17
Wangdue Phodrang	139.17
Zhemgang	119.29
TOTAL	3,531.08

Table 4. 9 Onion bulb production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Onion bulb)		
Bumthang	-	-	-
Chhukha	4.72	4.61	5.56
Dagana	27.28	27.09	27.67
Gasa	-	-	-
Haa	1.79	1.79	0.89
Lhuntse	8.82	8.78	22.55
Monggar	17.64	17.36	17.65
Paro	1.85	1.85	3.08
Pema Gatshel	17.73	17.43	23.06
Punakha	3.48	3.48	3.80
Samdrup Jongkhar	13.26	13.26	9.95
Samtse	9.88	9.86	6.81
Sarpang	22.02	21.73	21.17
Thimphu	0.13	0.13	0.18
Trashigang	27.21	27.19	25.12
Trashi Yangtse	12.39	12.32	12.88
Trongsa	3.20	3.20	4.99
Tsirang	32.36	32.04	30.54
Wangdue Phodrang	0.21	0.21	0.13
Zhemgang	0.45	0.45	0.27
TOTAL	204.43	202.80	216.29

Table 4. 10 Bunching onion production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Bunching Onion)		
Bumthang	1.07	1.07	1.42
Chhukha	10.10	10.10	5.89
Dagana	15.50	15.50	8.78
Gasa	4.48	4.48	3.36
Haa	4.10	4.10	5.34
Lhuntse	18.39	18.39	10.04
Monggar	39.40	39.40	20.50
Paro	4.63	4.63	3.89
Pema Gatshel	4.51	4.51	2.00
Punakha	41.18	41.18	54.57
Samdrup Jongkhar	4.90	4.90	2.13
Samtse	17.86	17.86	17.60
Sarpang	9.17	9.17	8.54
Thimphu	11.46	11.46	13.42
Trashigang	23.90	23.90	16.99
Trashi Yangtse	20.35	20.35	16.92
Trongsa	7.32	7.32	8.59
Tsirang	27.88	27.73	26.06
Wangdue Phodrang	40.73	40.73	42.09
Zhemgang	0.26	0.26	0.20
TOTAL	307.19	307.03	268.33

Table 4. 11 Eggplant production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Eggplant)		
Bumthang	0.24	0.24	0.75
Chhukha	4.82	4.37	5.83
Dagana	10.15	10.12	8.00
Gasa	0.33	0.33	0.86
Haa	1.20	1.18	1.82
Lhuntse	31.28	30.18	54.43
Monggar	11.51	11.08	13.39
Paro	34.38	34.38	53.50
Pema Gatshel	8.74	8.56	6.28
Punakha	39.34	34.74	58.29
Samdrup Jongkhar	10.37	10.37	8.97
Samtse	15.80	15.77	25.64
Sarpang	13.77	13.52	22.30
Thimphu	9.71	9.71	11.66
Trashigang	25.61	24.74	33.74
Trashi Yangtse	37.36	37.08	54.00
Trongsa	6.05	6.01	7.39
Tsirang	20.62	20.03	16.89
Wangdue Phodrang	24.13	23.99	38.25
Zhemgang	4.72	4.69	7.16
TOTAL	310.13	301.10	429.15

Table 4. 12 Tomato production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Tomato)		
Bumthang	1.25	1.25	4.38
Chhukha	21.27	19.62	21.69
Dagana	18.54	18.12	24.29
Gasa	0.23	0.23	0.15
Haa	13.58	13.58	26.93
Lhuntse	10.52	10.52	15.23
Monggar	9.36	8.76	9.52
Paro	9.59	9.59	19.00
Pema Gatshel	10.32	9.80	7.98
Punakha	14.94	12.05	21.78
Samdrup Jongkhar	16.10	15.51	18.85
Samtse	29.75	29.17	44.14
Sarpang	44.31	38.55	69.97
Thimphu	4.08	4.08	9.96
Trashigang	5.82	5.78	5.54
Trashi Yangtse	10.19	9.99	10.20
Trongsa	3.13	3.08	5.51
Tsirang	33.60	30.77	37.78
Wangdue Phodrang	4.39	4.33	4.04
Zhemgang	1.12	1.12	1.82
TOTAL	262.10	245.90	358.75

Table 4. 13 Pumpkins, squash & gourds production by dzongkhag, 2020

Dzongkhag	Production (MT)
Bumthang	18.92
Chhukha	662.34
Dagana	410.18
Gasa	6.02
Haa	106.05
Lhuntse	159.71
Monggar	210.74
Paro	90.90
Pema Gatshel	533.91
Punakha	151.76
Samdrup Jongkhar	392.40
Samtse	1,230.35
Sarpang	506.67
Thimphu	58.58
Trashigang	560.03
Trashi Yangtse	401.96
Trongsa	917.49
Tsirang	1,140.67
Wangdue Phodrang	178.40
Zhemgang	180.46
TOTAL	7,917.54

Table 4. 14 Cucumber production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Cucumber)		
Bumthang	0.34	0.34	1.68
Chhukha	38.71	38.56	93.82
Dagana	20.06	20.05	77.11
Gasa	0.54	0.53	3.69
Haa	6.71	6.69	18.50
Lhuntse	20.67	20.59	114.29
Monggar	49.55	48.07	149.91
Paro	6.18	6.18	20.95
Pema Gatshel	30.56	30.48	164.46
Punakha	37.49	34.91	123.11
Samdrup Jongkhar	33.27	33.21	118.47
Samtse	26.13	25.92	109.56
Sarpang	17.93	17.80	85.61
Thimphu	1.53	1.53	6.08
Trashigang	31.69	31.38	223.43
Trashi Yangtse	32.43	32.40	152.96
Trongsa	17.08	17.08	130.51
Tsirang	48.60	48.47	240.18
Wangdue Phodrang	21.59	21.58	104.33
Zhemgang	13.01	12.98	31.06
TOTAL	454.07	448.74	1,969.72

Table 4. 15 Carrot production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Carrot)		
Bumthang	6.34	6.34	18.36
Chhukha	115.21	113.88	173.57
Dagana	7.07	7.07	4.79
Gasa	4.89	4.89	8.17
Haa	232.98	205.36	802.45
Lhuntse	8.78	8.78	20.66
Monggar	39.80	39.80	44.64
Paro	109.02	104.17	357.28
Pema Gatshel	5.96	5.96	4.88
Punakha	6.99	6.93	11.70
Samdrup Jongkhar	22.28	22.28	25.63
Samtse	7.04	7.04	6.76
Sarpang	16.08	16.08	15.83
Thimphu	28.92	28.92	94.85
Trashigang	19.78	17.87	28.05
Trashi Yangtse	28.43	28.43	51.89
Trongsa	20.73	20.66	50.69
Tsirang	12.67	12.64	11.78
Wangdue Phodrang	18.24	17.46	53.06
Zhemgang	2.64	2.61	2.43
TOTAL	713.86	677.17	1,787.48

Table 4. 16 Raddish production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Raddish)		
Bumthang	19.26	19.26	63.89
Chhukha	88.58	87.68	195.91
Dagana	109.80	109.42	123.81
Gasa	10.94	10.94	34.17
Haa	70.94	70.84	205.23
Lhuntse	50.48	50.40	140.43
Monggar	269.23	268.65	436.57
Paro	90.54	87.70	233.45
Pema Gatshel	116.53	114.75	215.48
Punakha	31.96	31.81	91.61
Samdrup Jongkhar	123.05	122.82	196.44
Samtse	106.08	105.64	173.34
Sarpang	66.64	65.69	129.85
Thimphu	94.71	94.50	324.05
Trashigang	309.65	304.07	597.66
Trashi Yangtse	124.72	124.62	266.97
Trongsa	161.60	161.60	430.31
Tsirang	120.67	120.31	221.22
Wangdue Phodrang	404.00	402.20	1,060.04
Zhemgang	52.83	52.77	93.51
TOTAL	2,422.21	2,405.67	5,233.93

Table 4. 17 Turnip production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
		(Turnip)	
Bumthang	110.48	110.48	644.64
Chhukha	84.78	84.58	283.32
Dagana	10.16	10.16	9.40
Gasa	8.99	8.99	28.72
Haa	291.65	289.07	1,586.13
Lhuntse	10.18	10.18	24.70
Monggar	1.67	1.67	2.82
Paro	75.34	75.34	367.04
Pema Gatshel	5.76	5.49	10.37
Punakha	8.12	8.12	20.14
Samdrup Jongkhar	1.31	1.31	2.62
Samtse	2.36	2.36	4.14
Sarpang	0.04	0.04	0.05
Thimphu	77.95	77.95	371.98
Trashigang	17.70	17.70	55.84
Trashi Yangtse	17.85	17.85	67.73
Trongsa	55.35	55.35	295.76
Tsirang	0.87	0.87	3.06
Wangdue Phodrang	800.98	800.82	6,592.58
Zhemgang	6.06	6.06	13.71
TOTAL	1,587.60	1,584.40	10,384.76

Table 4. 18 Peas production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Peas)		
Bumthang	3.25	3.25	5.27
Chhukha	56.46	55.24	52.36
Dagana	21.99	21.92	22.78
Gasa	0.23	0.23	0.77
Haa	25.01	23.32	46.42
Lhuntse	17.07	16.06	38.42
Monggar	68.85	66.53	49.56
Paro	124.22	119.76	166.33
Pema Gatshel	22.84	21.25	23.24
Punakha	35.37	35.02	55.97
Samdrup Jongkhar	30.75	30.62	34.24
Samtse	22.32	22.32	33.30
Sarpang	14.97	14.47	17.12
Thimphu	31.04	29.60	43.60
Trashigang	36.99	33.55	43.20
Trashi Yangtse	21.60	21.56	19.85
Trongsa	8.84	8.55	17.54
Tsirang	68.36	65.65	63.67
Wangdue Phodrang	13.38	12.48	14.76
Zhemgang	1.83	1.83	0.98
TOTAL	625.37	603.20	749.41

Table 4. 19 Beans production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Beans)		
Bumthang	10.12	10.12	23.63
Chhukha	156.52	150.96	170.90
Dagana	153.36	151.53	97.85
Gasa	3.71	3.71	6.59
Haa	18.47	18.13	28.10
Lhuntse	98.81	97.44	167.61
Monggar	223.08	214.07	243.41
Paro	185.44	180.32	341.26
Pema Gatshel	95.38	93.44	87.94
Punakha	139.16	131.97	264.20
Samdrup Jongkhar	168.74	168.08	170.76
Samtse	258.50	255.84	244.91
Sarpang	208.40	204.20	304.74
Thimphu	43.32	43.02	102.90
Trashigang	289.87	267.05	274.85
Trashi Yangtse	90.16	88.94	85.99
Trongsa	75.89	75.09	96.79
Tsirang	222.54	215.28	238.67
Wangdue Phodrang	106.57	102.81	134.15
Zhemgang	72.60	71.62	83.24
TOTAL	2,620.64	2,543.62	3,168.51

Table 4. 20 Ginger production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Ginger)		
Bumthang	-	-	-
Chhukha	907.42	854.18	2,241.15
Dagana	158.49	157.54	291.77
Gasa	-	-	-
Haa	3.44	3.44	4.21
Lhuntse	14.51	14.51	25.61
Monggar	48.48	48.30	46.55
Paro	-	-	-
Pema Gatshel	242.77	241.00	464.78
Punakha	2.39	2.39	3.03
Samdrup Jongkhar	945.78	932.32	2,528.60
Samtse	756.63	727.76	1,660.28
Sarpang	261.33	247.33	483.66
Thimphu	-	-	-
Trashigang	54.57	54.27	88.42
Trashi Yangtse	16.25	16.25	24.87
Trongsa	8.71	8.42	18.55
Tsirang	218.42	217.60	477.85
Wangdue Phodrang	5.22	5.21	8.79
Zhemgang	198.45	190.14	521.94
TOTAL	3,842.86	3,720.66	8,890.06

Table 4. 21 Turmeric production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Turmeric)		
Bumthang	-	-	-
Chhukha	10.92	10.92	8.15
Dagana	11.51	11.51	23.52
Gasa	-	-	-
Haa	0.24	0.24	0.16
Lhuntse	0.62	0.62	0.60
Monggar	3.13	3.13	4.13
Paro	-	-	-
Pema Gatshel	17.12	17.12	19.39
Punakha	-	-	-
Samdrup Jongkhar	17.35	17.35	19.21
Samtse	35.97	35.97	33.72
Sarpang	28.27	28.10	46.22
Thimphu	-	-	-
Trashigang	5.34	5.34	5.11
Trashi Yangtse	0.71	0.71	0.45
Trongsa	0.31	0.31	1.14
Tsirang	18.66	18.66	12.95
Wangdue Phodrang	0.41	0.41	0.22
Zhemgang	5.33	5.33	11.75
TOTAL	155.90	155.73	186.72

Table 4. 22 Garlic production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
		(Garlic)	
Bumthang	10.31	10.31	15.69
Chhukha	4.39	4.39	2.25
Dagana	10.65	10.65	10.05
Gasa	11.88	11.88	17.25
Haa	20.56	20.55	16.55
Lhuntse	60.51	60.14	104.51
Monggar	69.33	68.04	40.59
Paro	8.60	8.54	9.82
Pema Gatshel	32.74	32.58	19.52
Punakha	9.34	9.22	7.11
Samdrup Jongkhar	32.60	32.60	22.76
Samtse	5.93	5.93	5.75
Sarpang	4.07	4.07	2.87
Thimphu	1.77	1.77	0.98
Trashigang	141.56	138.04	197.20
Trashi Yangtse	63.38	63.02	50.14
Trongsa	8.06	8.06	14.45
Tsirang	10.82	10.82	7.61
Wangdue Phodrang	67.49	67.39	144.59
Zhemgang	2.38	2.38	1.31
TOTAL	576.38	570.40	690.98

Table 4. 23 Cardamom production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Cardamom)		
Bumthang	-	-	-
Chhukha	2,668.88	2,615.06	299.77
Dagana	2,016.78	1,990.58	273.07
Gasa	-	-	-
Haa	730.33	729.17	106.94
Lhuntse	51.89	51.89	6.75
Monggar	153.06	152.56	21.81
Paro	-	-	-
Pema Gatshel	455.20	445.77	57.13
Punakha	10.56	10.56	1.54
Samdrup Jongkhar	299.95	298.76	37.12
Samtse	3,357.59	3,254.41	548.00
Sarpang	1,307.94	1,258.77	260.99
Thimphu	-	-	-
Trashigang	229.18	214.75	36.99
Trashi Yangtse	21.80	21.64	2.64
Trongsa	373.41	367.90	69.99
Tsirang	1,757.05	1,749.38	396.40
Wangdue Phodrang	17.54	16.92	4.03
Zhemgang	526.44	517.51	51.67
TOTAL	13,977.61	13,695.64	2,174.85

Table 4. 24 Coriander production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Coriander)		
Bumthang	3.25	3.25	3.85
Chhukha	13.34	13.34	6.78
Dagana	8.74	8.74	4.52
Gasa	2.93	2.93	3.30
Haa	5.29	5.29	6.36
Lhuntse	17.60	17.60	23.96
Monggar	39.70	39.70	22.45
Paro	11.04	11.04	9.61
Pema Gatshel	7.10	7.06	4.04
Punakha	22.03	22.03	34.55
Samdrup Jongkhar	4.89	4.89	1.85
Samtse	8.21	8.21	6.04
Sarpang	6.93	6.93	7.15
Thimphu	33.21	33.21	54.70
Trashigang	26.86	26.86	20.10
Trashi Yangtse	30.85	30.85	27.91
Trongsa	10.62	10.58	18.61
Tsirang	18.72	18.72	16.80
Wangdue Phodrang	22.43	22.43	27.65
Zhemgang	1.48	1.48	0.38
TOTAL	295.22	295.14	300.61

CHAPTER 5: MUSHROOM

5.1. Mushroom production by dzongkhag, and by type

Growing of mushroom has recently picked up among the farming communities. Table 5.1 shows the total Oyster production by dzongkhag and by years. The yield of Oyster mushroom is estimated based the spawn supplied by National Mushroom Centre (NMC) and Agriculture Research Development Centres (ARDCs). It is calculated at 1 kg per bag of spawn supplied (1 bottle of spawn with net weight of around 250 gram which is enough to inoculate 2 bags with subtrate wet weight of around 3 kg). A total production of about 112 MT of Oyster mushroom was estimated in 2020. Table 5.2 shows the total Shitake production by dzongkhag and by years. The yield of Shitake mushroom is calculated at 300 grams per log per yer (logs inoculated in previous 3 FY).

Chart 5. 1 Oyster and Shitake production (MT) by dzongkhag, 2020

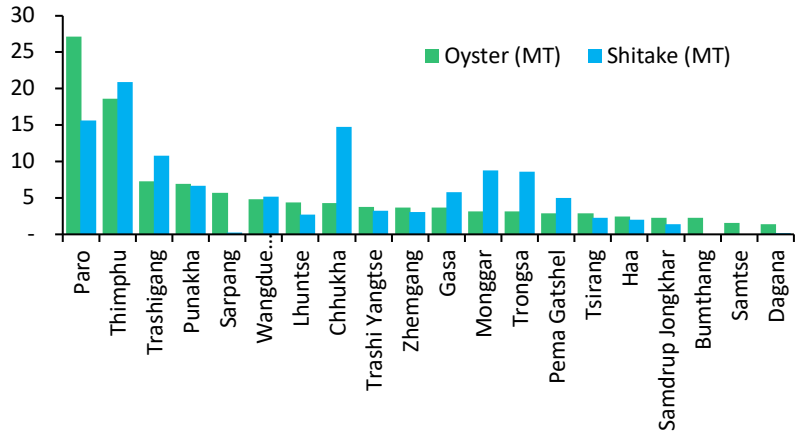


Table 5. 1 Oyster production, by dzongkhag, and by year

Dzongkhag	Oyster Production (MT)				
	2016/17	2018/18	2018/19	2019/20	2020/21
Bumthang	0.90	2.12	3.99	5.03	2.25
Chhukha	0.51	0.83	1.08	0.39	4.28
Dagana	-	0.05	1.03	1.89	1.37
Gasa	-	0.05	0.16	1.57	3.65
Haa	0.12	0.21	0.09	0.69	2.47
Lhuntse	0.52	0.69	1.79	4.88	4.40
Monggar	0.33	0.47	3.91	6.42	3.16
Paro	1.02	2.83	3.02	4.11	27.17
Pema Gatshel	0.06	0.01	0.22	1.01	2.90
Punakha	2.59	1.12	2.62	5.64	6.90
Samdrup Jongkhar	0.68	0.68	0.84	0.54	2.26
Samtse	0.01	0.21	-	0.25	1.56
Sarpang	2.04	2.07	5.71	6.42	5.68
Thimphu	2.98	3.09	4.25	8.16	18.62
Trashigang	0.21	3.58	4.64	3.60	7.27
Trashi Yangtse	0.09	0.55	0.19	0.87	3.75
Trongsa	0.19	0.76	-	2.33	3.11
Tsirang	0.08	0.47	1.02	3.29	2.90
Wangdue Phodrang	0.37	1.02	2.13	5.64	4.83
Zhemgang	0.05	4.09	-	3.78	3.71
TOTAL	12.74	24.90	36.69	66.49	112.25

Source: National Mushroom Centre, DoA

Table 5. 2 Shitake production, by dzongkhag, and by year

Dzongkhag	Shitake Production (MT)				
	2016/17	2018/18	2018/19	2019/20	2020/21
Bumthang	-	-	-	-	-
Chhukha	6.41	5.40	9.47	13.16	14.71
Dagana	-	3.58	3.76	3.76	0.18
Gasa	1.79	1.00	3.65	4.84	5.77
Haa	-	-	0.60	0.60	1.98
Lhuntse	1.60	1.39	1.71	2.46	2.73
Monggar	2.83	3.91	5.64	7.53	8.75
Paro	19.99	21.61	19.22	13.12	15.67
Pema Gatshel	0.84	3.02	5.42	6.25	4.97
Punakha	1.86	1.31	4.20	6.33	6.69
Samdrup Jongkhar	0.63	1.52	2.26	2.01	1.38
Samtse	-	-	-	-	-
Sarpang	-	-	-	-	0.26
Thimphu	18.52	12.28	11.33	13.98	20.91
Trashigang	5.64	13.29	17.24	16.17	10.81
Trashi Yangtse	1.72	0.67	2.03	1.91	3.22
Trongsa	4.02	5.28	6.44	6.03	8.64
Tsirang	1.20	1.81	2.03	1.28	2.27
Wangdue Phodrang	2.90	2.18	4.11	4.15	5.21
Zhemgang	6.34	3.65	3.00	1.20	3.06
TOTAL	76.28	81.89	102.08	104.75	117.21

Source: National Mushroom Centre, DoA

6

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 2020. A total of about 46,655 MT of roots and tuber were produced in 2020. 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, 2020

Type	Sown Area (Acre)	Harvest Area (Acre)	Production (MT)
Potato	10,411.29	10,342.26	45,500.33
Sweet potato	71.52	66.16	67.27
Cassava	389.16	318.60	607.92
Taro	176.51	163.57	243.53
Ground apple	126.50	121.21	235.89
TOTAL	11,174.98	11,011.80	46,654.94

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 45,500 MT of potatoes (excludes sweet potato) were produced, of which, the highest production was recorded in Wangdue Phodrang (about 30 percent), Paro (about 12 percent) and Trashigang (about 12 percent).

Figure 6.1 gives the production of potato by Wangdue Phodrang and Trashigang dzongkhags. In Wangdue Phodrang, Phobji (about 45 percent), Gangteng (about 27 percent) and Bjenag (about 12 percent) account for the highest production.

In terms of the cassava production, from the total of 608 MT, Samtse (about 30 percent), Chhukha (about 27 percent), and Dagana (about 15 percent) dzongkhags were recorded as the highest producer of cassava. The production of ground apple, although a recently picked farming business, the production has almost reached to 236 MT. Across the dzongkhag, Tsirang alone accounts for 20 percent, followed by Chhukha and Trashigang dzongkhags with respectively almost 18 percent and 12 percent of the total production. Chart 6.1 shows cassava and ground apple production by dzongkhag in 2020. The details of the production of roots and tubers by type and by dzongkhag are provided in table 6.2 – 6.6.

Chart 6. 1 Cassava and Ground apple production (MT) by dzongkhag, 2020

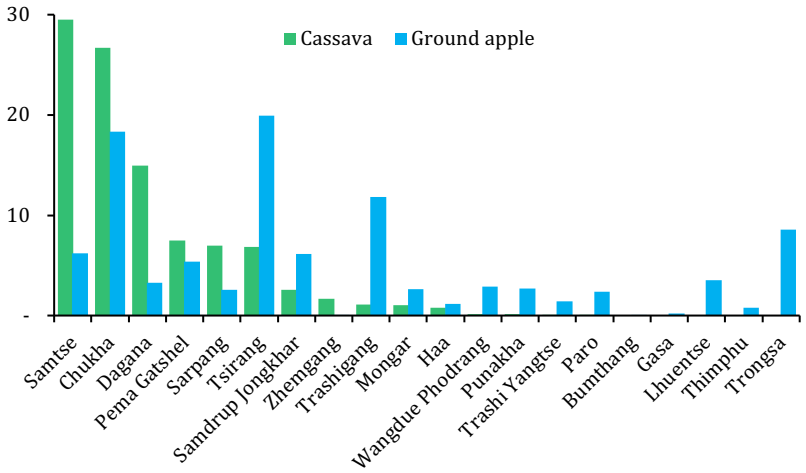


Figure 6. 1 Potato production (MT) by Wangdue Phodrang and Trashigang dzongkhags, 2020

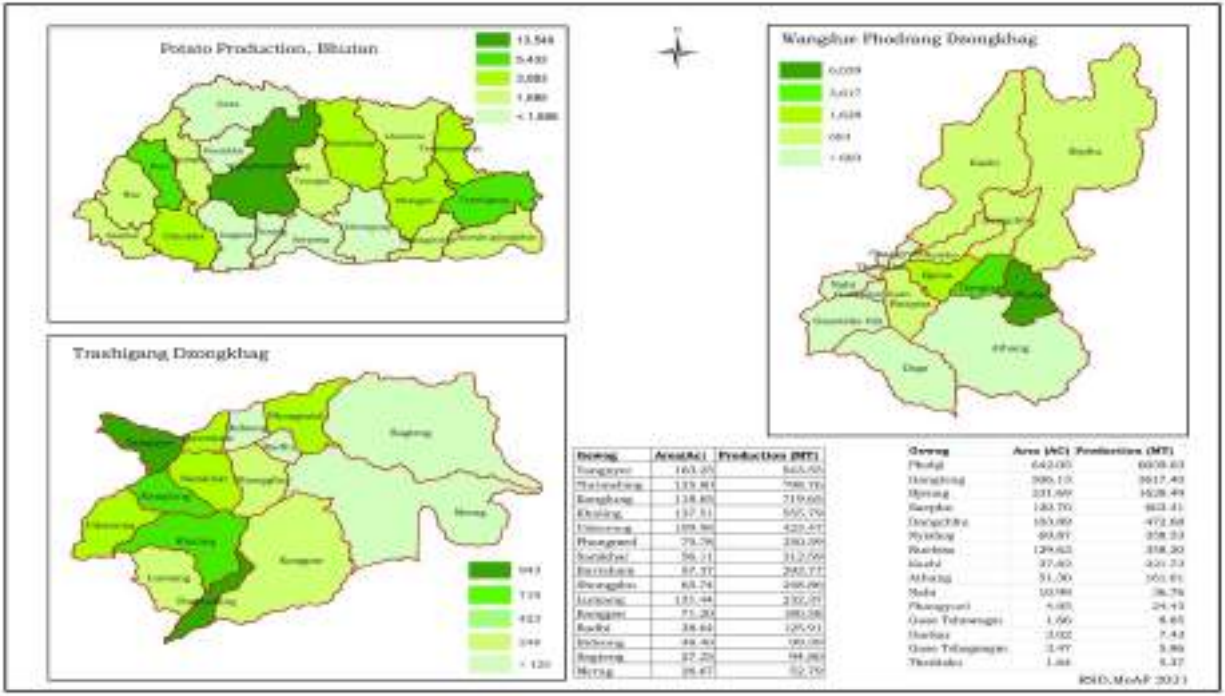


Table 6. 2 Potato prouduction by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
		(Potato)	
Bumthang	630.10	615.07	3,883.62
Chhukha	475.91	440.66	2,417.67
Dagana	157.77	178.40	246.74
Gasa	67.83	74.29	175.98
Haa	321.13	326.74	1,460.60
Lhuntse	303.47	242.01	781.03
Monggar	1,230.82	1,488.21	3,250.89
Paro	974.84	928.77	5,407.50
Pema Gatshel	424.29	383.02	1,277.72
Punakha	65.93	45.20	220.21
Samdrup Jongkhar	471.65	510.74	1,039.73
Samtse	347.53	264.66	780.45
Sarpang	228.76	172.11	464.13
Thimphu	269.39	248.39	1,686.04
Trashigang	1,369.63	1,362.71	5,432.85
Trashi Yangtse	502.86	467.65	2,028.20
Trongsa	186.89	166.06	895.97
Tsirang	258.52	189.22	361.56
Wangdue Phodrang	2,052.98	2,180.08	13,549.17
Zhemgang	70.97	58.27	140.26
TOTAL	10,411.29	10,342.26	45,500.33

Table 6. 3 Sweet potato production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Sweet potato)		
Bumthang	-	-	-
Chhukha	0.87	0.78	0.58
Dagana	2.34	2.34	2.37
Gasa	-	-	-
Haa	0.46	0.46	0.60
Lhuntse	1.07	1.07	1.64
Monggar	7.39	7.34	5.53
Paro	-	-	-
Pema Gatshel	8.35	7.88	5.36
Punakha	0.94	0.94	0.84
Samdrup Jongkhar	0.27	0.27	0.47
Samtse	8.98	8.94	7.21
Sarpang	1.54	1.36	1.74
Thimphu	-	-	-
Trashigang	17.91	13.49	21.88
Trashi Yangtse	5.45	5.45	4.45
Trongsa	-	-	-
Tsirang	11.75	11.75	10.43
Wangdue Phodrang	1.37	1.37	0.89
Zhemgang	2.83	2.72	3.28
TOTAL	71.52	66.16	67.27

Table 6. 4 Cassava production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Cassava)		
Bumthang	-	-	-
Chhukha	112.27	90.83	162.11
Dagana	47.62	47.04	91.08
Gasa	-	-	-
Haa	5.17	5.06	4.89
Lhuntse	-	-	-
Monggar	6.47	6.16	6.29
Paro	0.41	0.41	0.44
Pema Gatshel	46.47	21.67	45.30
Punakha	0.22	0.22	0.76
Samdrup Jongkhar	16.36	14.05	15.52
Samtse	86.59	72.64	179.55
Sarpang	21.48	17.56	42.33
Thimphu	-	-	-
Trashigang	5.20	4.76	6.48
Trashi Yangtse	1.02	1.02	0.45
Trongsa	-	-	-
Tsirang	34.07	32.37	41.63
Wangdue Phodrang	0.32	0.32	0.78
Zhemgang	5.48	4.48	10.31
TOTAL	389.16	318.60	607.92

Table 6. 5 Taro production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
		(Taro)	
Bumthang	-	-	-
Chhukha	16.76	14.42	24.35
Dagana	7.62	7.62	9.81
Gasa	-	-	-
Haa	0.15	0.15	0.20
Lhuntse	0.43	0.40	0.89
Monggar	4.78	4.78	6.94
Paro	-	-	-
Pema Gatshel	11.65	8.03	10.65
Punakha	-	-	-
Samdrup Jongkhar	5.77	5.69	4.29
Samtse	41.99	40.55	58.50
Sarpang	37.55	36.62	56.49
Thimphu	-	-	-
Trashigang	8.20	6.30	13.33
Trashi Yangtse	0.18	0.18	0.03
Trongsa	-	-	-
Tsirang	29.53	28.10	33.08
Wangdue Phodrang	-	-	-
Zhemgang	11.88	10.73	24.97
TOTAL	176.51	163.57	243.53

Table 6. 6 Ground apple production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Ground apple)		
Bumthang	0.02	0.02	0.08
Chhukha	17.77	17.76	43.22
Dagana	4.75	4.75	7.78
Gasa	0.22	0.22	0.44
Haa	1.63	1.63	2.78
Lhuntse	2.82	2.82	8.29
Monggar	3.70	3.09	6.25
Paro	1.53	1.53	5.60
Pema Gatshel	6.64	6.61	12.65
Punakha	3.24	3.24	6.41
Samdrup Jongkhar	11.34	11.34	14.55
Samtse	11.47	7.12	14.65
Sarpang	4.96	4.96	6.09
Thimphu	0.61	0.61	1.85
Trashigang	16.20	16.20	27.87
Trashi Yangtse	2.73	2.73	3.36
Trongsa	10.23	10.20	20.21
Tsirang	23.51	23.25	46.98
Wangdue Phodrang	3.09	3.09	6.77
Zhemgang	0.05	0.05	0.06
TOTAL	126.50	121.21	235.89

CHAPTER 7: FRUITS

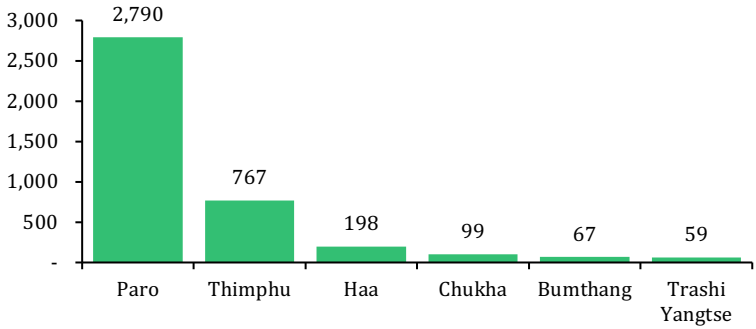
7.1. Fruits production by dzongkhag and by type

Table 7.1 shows the total production of fruits by type in 2020. A total of about 57,080 MT of fruits were produced in 2020. The major fruits grown in the country are apple, arecanut, mandarin and mango.

Figure 7.1 presents the major fruit crop production by dzongkhag, 2020. Sarpang (about 21 percent), Samtse (about 18 percent) and Samdrup Jongkhag (about 11 percent) were the top three dzongkhags that produced major fruit crops.

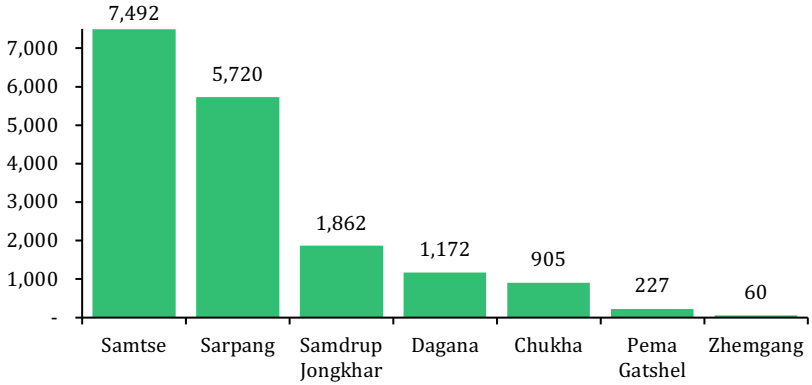
Chart 7.1 shows apple production (above 50 MT) by dzongkhag in 2020. A total of 4,056 MT of apple was production, of which, Paro and Thimphu combined accounts for 88 percent of the total production.

Chart 7. 1 Apple production (above 50 MT) by dzongkhag, 2020



In terms of arecanut production (refer Chart 7.2), of the total 17,446 MT, Samtse (about 43 percent) and Sarpang (about 33 percent) dzongkhags account for the highest production. A total of 819 MT of mangoes were produced, and the highest production were from Pema Gatshel (about 17 percent), Sarpang (about 13 percent) and Tsirang (about 15 percent).

Chart 7. 2 Areca nut production (above 50 MT) by dzongkhag, 2020



A total of 25,661 MT of mandarin production was recorded in 2020. Sarpang (about 16 percent), Dagana (about 15 percent) and Pema Gatshel (about 15 percent) dzongkhags account for the highest production. Figure 7.2 gives the mandarin production by Sarpang and Dagana dzongkhags. In Sarpang, Gakling and Jigme Chhoeling (about 32 percent each), and Senggey gewogs (about 13 percent) account for the highest production. In Dagana, Gozhi (about 25 percent), Drukjeygang (about 18 percent), and Tsangkha (about 14 percent) gewogs account for the highest production among others.

Hazelnut plantations have received huge attention by many farmers in Bhutan. Chart 7.3 presents hazelnut production by dzongkhag in 2020.

The number of plants as per the survey was recorded at 938,364 plants, of which, bearing plants were 53,105 trees. A slightly more than 6 MT of hazelnut production was recorded in 2020. From the total production, Trashigang (about 41 percent) and Monggar (about 35 percent) dzongkhags account for the highest production. Table 7.2 – 7.25 provide the detailed production of fruits by type and by dzongkhag.

Chart 7. 3 Hazelnut production (MT) by dzongkhag, 2020

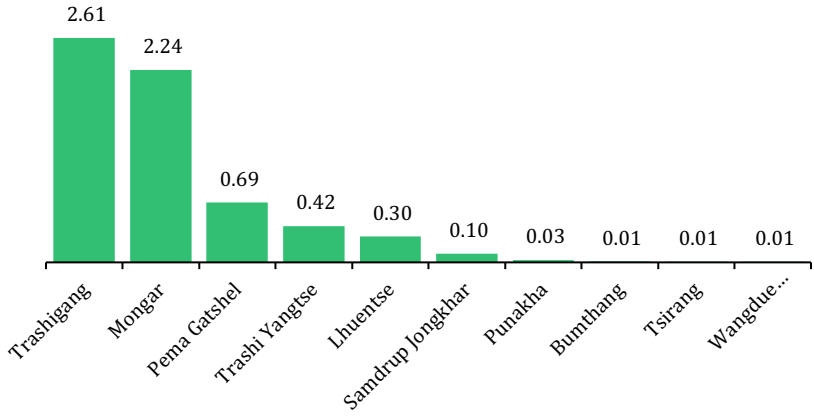


Table 7. 1 Total fruits production by type, 2020

Type	Total trees	Bearing trees	Production (MT)
Apple	267,247	191,617	4,056.08
Pear	60,513	30,950	1,107.00
Peach	50,264	35,283	1,061.19
Plum	17,423	12,282	438.69
Apricot	2,061	921	35.87
Persimmon	11,370	5,028	206.77
Walnut	29,750	9,210	218.96
Lemons & lime	21,609	7,703	115.21
Arecanut	4,192,923	1,528,064	17,445.68
Mandarin	1,737,753	858,519	25,660.80
Hazelnut	938,364	53,105	6.42
Mango	90,466	32,519	819.08
Guava	58,932	45,640	1,062.14
Pomegranate	14,384	5,280	79.77
Avocado	77,990	5,017	111.81
Litchi	52,731	17,210	329.31
Jackfruit	7,941	3,401	284.84
Banana	693,979	206,099	3,149.81
Tree tomato	58,901	47,454	441.06
Dragon fruit	2,587	131	0.36
Kiwi	9,274	3,069	28.36
Papaya	14,189	9,776	205.81
Pineapple	292,362	123,629	161.69
	Sown Area (Acre)	**Harvest Area (Acre)**	**Production (MT)**
Watermelon	38.12	35.46	53.47
TOTAL FRUITS	8,703,051	3,231,942	57,080

Figure 7. 2 Major fruit production by dzongkhag, 2020

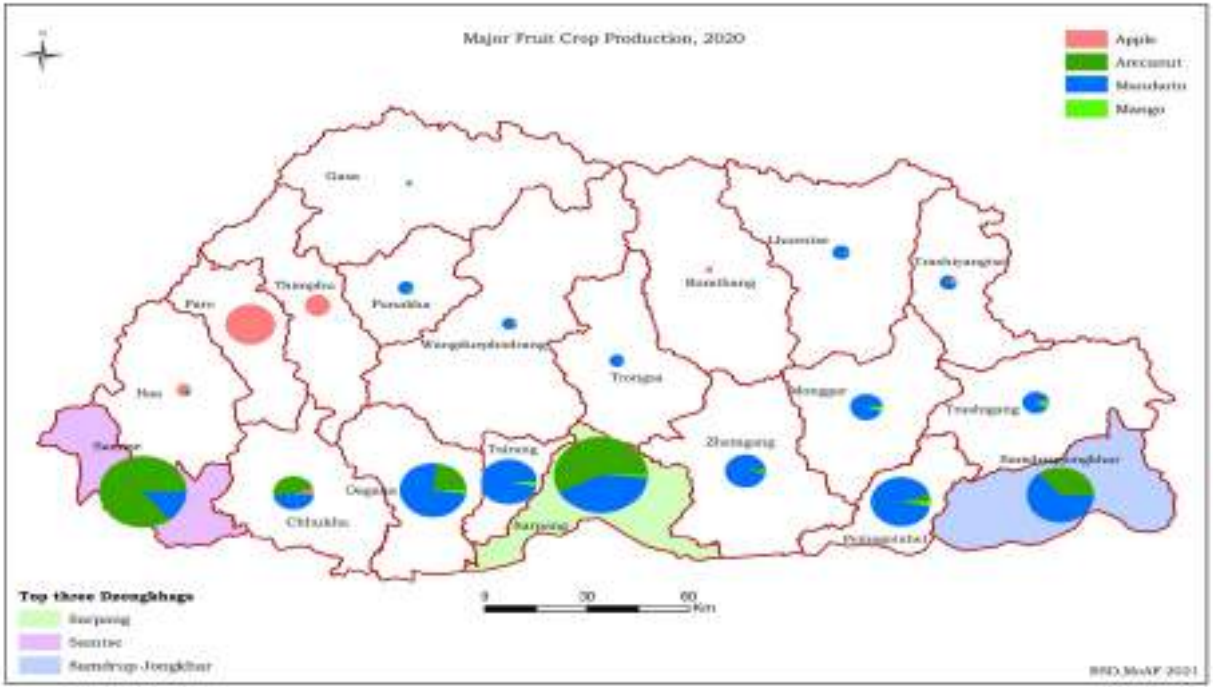
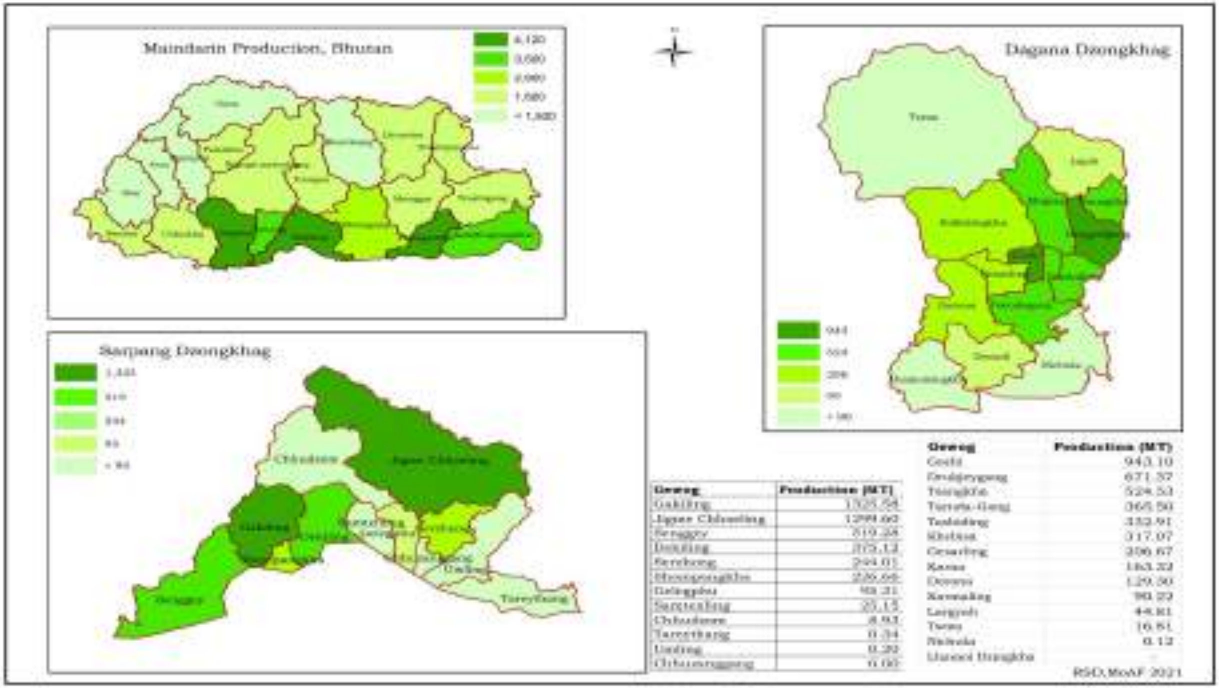


Figure 7. 3 **Mandarin production (MT) by Sarpang and Dagana dzongkhags, 2020**



Gewog	Production (MT)
Gakiling	1325.54
Jigme Chhoeling	1299.62
Senggey	519.28
Dekiling	375.13
Serzhong	244.01
Shompangkha	226.66
Gelegphu	93.31
Samtenling	35.15
Chhudzom	8.93
Tareythang	0.34
Umling	0.20
Chhuzanggang	0.00

Gewog	Production (MT)
Goshi	943.10
Drukjeygang	671.37
Tsangkha	524.53
Tsenda-Gang	365.50
Tashiding	332.91
Khebisa	317.07
Gesarling	206.67
Karna	163.32
Dorona	129.50
Karmaling	90.22
Lajab	44.81
Tseza	16.81
Nichula	0.12
Lhamoi Dzingkha	-

Table 7. 2 Apple production by dzongkhag, 2020

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Apple)		
Bumthang	6,237	4,047	66.90
Chhukha	5,646	3,759	98.73
Dagana	522	32	1.28
Gasa	38	-	-
Haa	15,187	10,743	197.98
Lhuntse	1,785	390	10.35
Monggar	1,227	371	8.45
Paro	177,936	132,475	2,789.75
Pema Gatshel	724	264	4.84
Punakha	47	-	-
Samdrup Jongkhar	1,997	437	9.16
Samtse	28	-	-
Sarpang	-	-	-
Thimphu	44,051	35,396	767.05
Trashigang	3,332	614	25.69
Trashi Yangtse	6,924	2,381	58.78
Trongsa	61	24	0.17
Tsirang	229	19	0.49
Wangdue Phodrang	1,248	667	16.46
Zhemgang	30	-	-
TOTAL	267,247	191,617	4,056.08

Table 7. 3 Pear production by dzongkhag, 2020

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Pear)		
Bumthang	736	385	10.74
Chhukha	2,571	1,169	43.46
Dagana	1,542	1,146	65.38
Gasa	1,004	283	2.20
Haa	287	193	4.17
Lhuntse	5,378	2,145	60.43
Monggar	10,128	5,326	150.56
Paro	2,461	1,420	35.01
Pema Gatshel	3,047	1,413	31.10
Punakha	3,978	2,074	75.19
Samdrup Jongkhar	2,486	1,668	91.41
Samtse	1,204	774	28.05
Sarpang	1,215	984	51.81
Thimphu	749	386	10.05
Trashigang	11,094	4,852	200.28
Trashi Yangtse	4,862	2,732	52.55
Trongsa	1,809	558	10.54
Tsirang	2,952	1,986	126.64
Wangdue Phodrang	2,653	1,296	54.70
Zhemgang	357	160	2.71
TOTAL	60,513	30,950	1,107.00

Table 7. 4 Peach production by dzongkhag, 2020

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Peach)		
Bumthang	702	391	11.56
Chhukha	3,188	2,074	52.28
Dagana	1,886	1,485	45.35
Gasa	293	143	1.85
Haa	343	239	3.99
Lhuntse	4,752	3,100	94.78
Monggar	4,361	3,234	94.84
Paro	4,113	2,982	100.60
Pema Gatshel	3,912	2,728	57.76
Punakha	3,653	2,365	93.23
Samdrup Jongkhar	2,472	2,012	65.69
Samtse	2,313	1,767	43.11
Sarpang	1,025	883	19.24
Thimphu	1,229	775	20.37
Trashigang	4,291	3,210	134.16
Trashi Yangtse	2,157	1,501	41.37
Trongsa	2,263	1,149	33.21
Tsirang	3,679	2,647	82.11
Wangdue Phodrang	2,123	1,467	35.65
Zhemgang	1,508	1,131	30.04
TOTAL	50,264	35,283	1,061.19

Table 7. 5 Plum production by dzongkhag, 2020

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Plum)		
Bumthang	441	284	7.46
Chhukha	407	209	4.72
Dagana	1,457	1,171	36.70
Gasa	28	3	0.08
Haa	54	39	0.79
Lhuntse	2,406	1,568	56.11
Monggar	2,127	1,569	65.13
Paro	340	295	10.60
Pema Gatshel	1,203	807	28.39
Punakha	625	408	15.37
Samdrup Jongkhar	809	630	22.72
Samtse	177	107	2.28
Sarpang	846	725	21.55
Thimphu	267	197	6.01
Trashigang	2,104	1,458	54.77
Trashi Yangtse	864	575	18.71
Trongsa	428	286	12.38
Tsirang	2,080	1,465	58.15
Wangdue Phodrang	386	261	10.57
Zhemgang	373	223	6.21
TOTAL	17,423	12,282	438.69

Table 7. 6 Apricot production by dzongkhag, 2020

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Apricot)		
Bumthang	6	-	-
Chhukha	32	-	-
Dagana	457	142	4.66
Gasa	-	-	-
Haa	-	-	-
Lhuntse	142	17	0.66
Monggar	42	22	0.70
Paro	226	153	5.53
Pema Gatshel	111	-	-
Punakha	27	13	0.34
Samdrup Jongkhar	4	4	0.11
Samtse	383	269	12.49
Sarpang	-	-	-
Thimphu	205	146	4.90
Trashigang	11	5	0.27
Trashi Yangtse	8	3	0.03
Trongsa	-	-	-
Tsirang	326	76	2.88
Wangdue Phodrang	44	32	1.68
Zhemgang	39	39	1.62
TOTAL	2,061	921	35.87

Table 7. 7 Persimmon production by dzongkhag, 2020

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Persimmon)		
Bumthang	-	-	-
Chhukha	188	11	0.17
Dagana	439	89	1.05
Gasa	67	21	0.36
Haa	28	3	0.02
Lhuntse	1,161	202	3.58
Monggar	1,703	714	19.13
Paro	577	319	13.30
Pema Gatshel	596	249	5.10
Punakha	2,103	1,275	60.82
Samdrup Jongkhar	142	62	0.58
Samtse	47	23	0.26
Sarpang	4	4	0.02
Thimphu	187	83	1.21
Trashigang	849	424	15.45
Trashi Yangtse	320	171	3.09
Trongsa	434	153	4.28
Tsirang	653	34	0.70
Wangdue Phodrang	1,841	1,193	77.64
Zhemgang	31	-	-
TOTAL	11,370	5,028	206.77

Table 7. 8 Walnut production by dzongkhag, 2020

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Walnut)		
Bumthang	816	517	8.88
Chhukha	606	175	2.65
Dagana	674	63	2.04
Gasa	47	-	-
Haa	285	103	2.71
Lhuntse	1,920	548	13.42
Monggar	2,057	875	21.86
Paro	3,793	1,834	48.52
Pema Gatshel	1,378	437	6.50
Punakha	1,775	744	14.11
Samdrup Jongkhar	3,878	283	7.69
Samtse	432	3	0.06
Sarpang	277	5	0.05
Thimphu	1,419	389	8.23
Trashigang	4,909	1,396	42.20
Trashi Yangtse	1,659	606	11.33
Trongsa	1,496	473	16.65
Tsirang	887	133	2.07
Wangdue Phodrang	1,074	454	6.44
Zhemgang	368	169	3.54
TOTAL	29,750	9,210	218.96

Table 7. 9 Lemons & lime production by dzongkhag, 2020

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Lemons & Lime)		
Bumthang	-	-	-
Chhukha	4,651	848	14.95
Dagana	2,161	532	9.19
Gasa	3	3	0.09
Haa	196	44	0.50
Lhuntse	172	132	1.70
Monggar	67	58	1.67
Paro	-	-	-
Pema Gatshel	1,602	587	8.23
Punakha	897	650	7.98
Samdrup Jongkhar	516	402	4.54
Samtse	6,878	2,079	33.59
Sarpang	2,151	1,290	16.57
Thimphu	-	-	-
Trashigang	231	161	3.03
Trashi Yangtse	13	13	0.20
Trongsa	146	27	0.58
Tsirang	1,517	672	9.07
Wangdue Phodrang	253	137	2.63
Zhemgang	154	67	0.70
TOTAL	21,609	7,703	115.21

Table 7. 10 Arecanut production by dzongkhag, 2020

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Arecanut)		
Bumthang	-	-	-
Chhukha	270,998	95,711	905.13
Dagana	367,341	133,606	1,171.81
Gasa	-	-	-
Haa	-	-	-
Lhuntse	-	-	-
Monggar	119	16	0.16
Paro	-	-	-
Pema Gatshel	73,390	10,479	226.90
Punakha	-	-	-
Samdrup Jongkhar	246,040	100,898	1,861.54
Samtse	1,480,983	509,387	7,491.55
Sarpang	1,705,893	672,944	5,720.11
Thimphu	-	-	-
Trashigang	-	-	-
Trashi Yangtse	-	-	-
Trongsa	-	-	-
Tsirang	6,034	577	8.83
Wangdue Phodrang	-	-	-
Zhemgang	42,126	4,447	59.66
TOTAL	4,192,923	1,528,064	17,445.68

Table 7. 11 Mandarin production by dzongkhag, 2020

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Mandarin)		
Bumthang	-	-	-
Chhukha	97,972	49,041	900.89
Dagana	238,842	120,752	3,805.72
Gasa	36	29	0.32
Haa	11,569	2,802	32.46
Lhuntse	38,770	12,566	318.80
Monggar	102,128	40,297	1,112.56
Paro	9	-	-
Pema Gatshel	269,566	124,357	3,766.24
Punakha	19,604	13,364	257.49
Samdrup Jongkhar	209,679	100,555	3,304.18
Samtse	119,587	56,809	1,275.45
Sarpang	145,899	122,080	4,120.17
Thimphu	-	-	-
Trashigang	55,274	17,558	748.76
Trashi Yangtse	25,943	10,732	267.09
Trongsa	25,840	10,258	266.03
Tsirang	168,598	97,036	3,478.65
Wangdue Phodrang	13,144	5,463	214.51
Zhemgang	195,293	74,819	1,791.50
TOTAL	1,737,753	858,519	25,660.80

Table 7. 12 Hazelnut production by dzongkhag, 2020

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Hazelnut)		
Bumthang	13,593	58	0.01
Chhukha	15,732	2	0.00
Dagana	37,886	-	-
Gasa	1,419	-	-
Haa	3,981	-	-
Lhuntse	68,020	561	0.30
Monggar	116,515	10,924	2.24
Paro	6,616	-	-
Pema Gatshel	98,424	8,709	0.69
Punakha	26,829	159	0.03
Samdrup Jongkhar	163,030	1,892	0.10
Samtse	-	-	-
Sarpang	-	-	-
Thimphu	517	-	-
Trashigang	251,164	28,346	2.61
Trashi Yangtse	39,436	2,379	0.42
Trongsa	20,011	-	-
Tsirang	51,544	6	0.01
Wangdue Phodrang	7,056	68	0.01
Zhemgang	16,591	-	-
TOTAL	938,364	53,105	6.42

Table 7. 13 Mango production by dzongkhag, 2020

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Mango)		
Bumthang	-	-	-
Chhukha	3,496	882	21.04
Dagana	7,924	3,242	104.30
Gasa	-	-	-
Haa	121	13	0.09
Lhuntse	491	184	8.12
Monggar	3,734	2,312	68.45
Paro	-	-	-
Pema Gatshel	21,946	8,268	141.19
Punakha	1,420	855	28.70
Samdrup Jongkhar	8,496	2,596	44.39
Samtse	7,489	1,509	37.71
Sarpang	8,486	3,533	109.64
Thimphu	-	-	-
Trashigang	6,511	2,011	71.30
Trashi Yangtse	1,959	647	11.18
Trongsa	1,524	350	8.96
Tsirang	9,770	3,516	119.97
Wangdue Phodrang	804	213	6.49
Zhemgang	6,297	2,387	37.56
TOTAL	90,466	32,519	819.08

Table 7. 14 Guava production by dzongkhag, 2020

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Guava)		
Bumthang	-	-	-
Chhukha	3,743	3,087	61.11
Dagana	4,225	3,482	73.20
Gasa	-	-	-
Haa	434	185	2.18
Lhuntse	947	794	33.37
Monggar	1,936	1,675	52.67
Paro	-	-	-
Pema Gatshel	7,470	4,274	65.24
Punakha	6,256	5,821	129.20
Samdrup Jongkhar	3,562	2,809	55.03
Samtse	4,727	3,308	76.85
Sarpang	5,674	4,214	77.77
Thimphu	-	-	-
Trashigang	2,089	1,445	65.49
Trashi Yangtse	1,081	916	26.67
Trongsa	3,389	3,067	83.71
Tsirang	10,029	7,832	199.35
Wangdue Phodrang	1,472	1,236	30.30
Zhemgang	1,897	1,496	30.00
TOTAL	58,932	45,640	1,062.14

Table 7. 15 Pomegranate production by dzongkhag, 2020

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Pomegranate)		
Bumthang	-	-	-
Chhukha	1,176	44	0.72
Dagana	1,321	596	9.33
Gasa	34	34	1.03
Haa	13	-	-
Lhuntse	374	298	4.52
Monggar	506	270	3.85
Paro	92	75	2.16
Pema Gatshel	2,882	449	7.15
Punakha	796	459	6.89
Samdrup Jongkhar	528	299	3.09
Samtse	531	242	3.28
Sarpang	314	91	1.16
Thimphu	-	-	-
Trashigang	522	378	6.40
Trashi Yangtse	217	136	1.60
Trongsa	310	167	2.12
Tsirang	4,237	1,475	21.71
Wangdue Phodrang	504	259	4.71
Zhemgang	26	10	0.06
TOTAL	14,384	5,280	79.77

Table 7. 16 Avocado production by dzongkhag, 2020

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Avocado)		
Bumthang	-	-	-
Chhukha	4,097	83	5.62
Dagana	6,815	205	3.52
Gasa	-	-	-
Haa	874	33	0.30
Lhuntse	1,430	150	7.09
Monggar	8,532	1,001	20.60
Paro	-	-	-
Pema Gatshel	8,719	643	9.51
Punakha	2,379	307	5.98
Samdrup Jongkhar	5,624	344	4.10
Samtse	4,292	146	4.80
Sarpang	6,336	227	7.02
Thimphu	-	-	-
Trashigang	3,847	341	5.70
Trashi Yangtse	323	17	0.12
Trongsa	1,521	76	2.69
Tsirang	15,820	906	24.29
Wangdue Phodrang	1,564	238	4.45
Zhemgang	5,818	301	6.01
TOTAL	77,990	5,017	111.81

Table 7. 17 Litchi production by dzongkhag, 2020

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Litchi)		
Bumthang	-	-	-
Chhukha	3,683	725	17.57
Dagana	5,003	942	31.25
Gasa	-	-	-
Haa	-	-	-
Lhuntse	-	-	-
Monggar	450	57	0.68
Paro	-	-	-
Pema Gatshel	7,166	1,276	18.58
Punakha	13	-	-
Samdrup Jongkhar	4,825	1,363	24.06
Samtse	6,655	1,866	36.42
Sarpang	16,032	9,574	182.10
Thimphu	-	-	-
Trashigang	21	-	-
Trashi Yangtse	12	-	-
Trongsa	7	7	0.14
Tsirang	5,815	876	11.32
Wangdue Phodrang	88	2	0.02
Zhemgang	2,961	522	7.17
TOTAL	52,731	17,210	329.31

Table 7. 18 Jackfruit production by dzongkhag, 2020

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Jackfruit)		
Bumthang	-	-	-
Chhukha	452	214	18.62
Dagana	809	286	24.11
Gasa	-	-	-
Haa	-	-	-
Lhuntse	-	-	-
Monggar	34	31	2.43
Paro	-	-	-
Pema Gatshel	2,603	790	65.01
Punakha	20	13	1.36
Samdrup Jongkhar	757	277	21.19
Samtse	970	596	44.46
Sarpang	1,256	753	61.70
Thimphu	-	-	-
Trashigang	27	14	1.22
Trashi Yangtse	42	27	2.98
Trongsa	135	27	1.17
Tsirang	394	147	13.11
Wangdue Phodrang	32	2	0.02
Zhemgang	412	227	27.45
TOTAL	7,941	3,401	284.84

Table 7. 19 Banana production by dzongkhag, 2020

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Banana)		
Bumthang	-	-	-
Chhukha	42,428	13,659	240.87
Dagana	71,733	21,484	394.38
Gasa	-	-	-
Haa	5,323	3,098	23.21
Lhuntse	5,068	1,896	27.65
Monggar	16,848	4,673	63.98
Paro	-	-	-
Pema Gatshel	36,467	11,137	185.68
Punakha	2,515	943	12.86
Samdrup Jongkhar	40,396	14,583	177.07
Samtse	76,687	23,612	408.04
Sarpang	139,621	44,759	613.82
Thimphu	-	-	-
Trashigang	19,225	5,717	76.74
Trashi Yangtse	5,691	1,800	23.86
Trongsa	7,099	2,595	20.34
Tsirang	191,636	43,997	697.29
Wangdue Phodrang	6,804	2,775	34.25
Zhemgang	26,438	9,371	149.77
TOTAL	693,979	206,099	3,149.81

Table 7. 20 Tree tomato production by dzongkhag, 2020

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Tree tomato)		
Bumthang	-	-	-
Chhukha	2,595	2,250	16.63
Dagana	4,236	3,444	28.67
Gasa	227	209	1.97
Haa	263	187	1.20
Lhuntse	4,527	4,141	52.39
Monggar	5,860	3,125	30.67
Paro	-	-	-
Pema Gatshel	3,156	2,357	22.05
Punakha	5,929	5,055	56.59
Samdrup Jongkhar	732	602	6.39
Samtse	1,787	1,352	10.30
Sarpang	7,036	6,549	49.43
Thimphu	-	-	-
Trashigang	1,911	1,606	15.56
Trashi Yangtse	1,025	878	9.23
Trongsa	2,743	2,257	20.49
Tsirang	13,223	10,228	87.30
Wangdue Phodrang	2,390	2,096	21.56
Zhemgang	1,259	1,117	10.62
TOTAL	58,901	47,454	441.06

Table 7. 21 Dragon fruit production by dzongkhag, 2020

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Dragon fruit)		
Bumthang	-	-	-
Chhukha	900	-	-
Dagana	14	-	-
Gasa	-	-	-
Haa	-	-	-
Lhuntse	4	-	-
Monggar	69	48	0.24
Paro	-	-	-
Pema Gatshel	380	10	0.01
Punakha	-	-	-
Samdrup Jongkhar	298	58	0.06
Samtse	79	-	-
Sarpang	564	-	-
Thimphu	-	-	-
Trashigang	9	6	0.02
Trashi Yangtse	-	-	-
Trongsa	7	-	-
Tsirang	245	6	0.01
Wangdue Phodrang	17	3	0.03
Zhemgang	-	-	-
TOTAL	2,587	131	0.36

Table 7. 22 Kiwi production by dzongkhag, 2020

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Kiwi)		
Bumthang	34	-	-
Chhukha	2,664	1,674	13.57
Dagana	873	116	2.53
Gasa	-	-	-
Haa	51	3	0.01
Lhuntse	138	8	0.05
Monggar	74	-	-
Paro	56	-	-
Pema Gatshel	-	-	-
Punakha	74	-	-
Samdrup Jongkhar	385	206	1.20
Samtse	284	190	0.97
Sarpang	173	118	1.54
Thimphu	23	-	-
Trashigang	58	25	0.25
Trashi Yangtse	18	13	0.05
Trongsa	4	-	-
Tsirang	3,356	654	7.60
Wangdue Phodrang	357	57	0.55
Zhemgang	651	6	0.03
TOTAL	9,274	3,069	28.36

Table 7. 23 Papaya production by dzongkhag, 2020

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Papaya)		
Bumthang	-	-	-
Chhukha	137	50	0.79
Dagana	1,255	882	15.73
Gasa	-	-	-
Haa	-	-	-
Lhuntse	21	21	0.38
Monggar	284	244	3.86
Paro	-	-	-
Pema Gatshel	618	414	11.36
Punakha	169	85	1.17
Samdrup Jongkhar	892	757	13.25
Samtse	917	549	10.43
Sarpang	4,802	3,223	64.38
Thimphu	-	-	-
Trashigang	176	143	3.77
Trashi Yangtse	209	189	3.30
Trongsa	401	282	5.70
Tsirang	4,066	2,776	68.98
Wangdue Phodrang	97	70	1.27
Zhemgang	146	93	1.46
TOTAL	14,189	9,776	205.81

Table 7. 24 Watermelon production by dzongkhag, 2020

Dzongkhag	Sown area (Acre)	Harvest area (Acre)	Production (MT)
	(Watermelon)		
Bumthang	-	-	-
Chhukha	0.02	0.02	0.03
Dagana	2.07	2.07	0.94
Gasa	-	-	-
Haa	-	-	-
Lhuntse	2.68	2.50	2.22
Monggar	0.03	0.03	0.04
Paro	0.03	0.03	0.02
Pema Gatshel	2.00	1.98	3.54
Punakha	0.21	0.21	1.14
Samdrup Jongkhar	1.08	1.08	2.24
Samtse	-	-	-
Sarpang	1.18	1.18	2.64
Thimphu	-	-	-
Trashigang	0.84	0.84	1.12
Trashi Yangtse	6.79	5.46	9.17
Trongsa	0.07	0.07	0.03
Tsirang	8.20	7.07	10.36
Wangdue Phodrang	0.20	0.20	0.30
Zhemgang	12.73	12.73	19.67
TOTAL	38.12	35.46	53.47

Table 7. 25 Pineapple production by dzongkhag, 2020

Dzongkhag	Total trees	Bearing trees	Production (MT)
	(Pineapple)		
Bumthang	-	-	-
Chhukha	14,727	6,717	10.97
Dagana	39,217	12,400	40.94
Gasa	-	-	-
Haa	-	-	-
Lhuntse	-	-	-
Monggar	31,319	19,918	16.31
Paro	-	-	-
Pema Gatshel	90,227	27,150	36.77
Punakha	-	-	-
Samdrup Jongkhar	20,575	8,213	8.35
Samtse	15,730	10,229	10.84
Sarpang	49,847	28,754	27.04
Thimphu	-	-	-
Trashigang	3,580	1,968	1.36
Trashi Yangtse	-	-	-
Trongsa	102	27	0.02
Tsirang	12,158	3,189	3.71
Wangdue Phodrang	15	15	0.03
Zhemgang	14,866	5,049	5.37
TOTAL	292,362	123,629	161.69

CAPI SURVEY QUESTIONNAIRE 2020

Survey Solutions

Agriculture Survey Questionnaire 2020

MODULE A: IDENTIFICATION

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

MODULE B: CEREAL

B1. Did your household grow any CEREAL CROP in this gewog in 2020?

- 01 ○ Yes
- 02 ○ No

B2_1. What CEREAL did you grow in this Gewog during the reference year? Please select all that apply.

- 01 ☐ Paddy (irrigated)
- 02 ☐ Paddy(upland)
- 03 ☐ Maize
- 04 ☐ Wheat
- 05 ☐ Barley
- 06 ☐ Millet(all types)
- 07 ☐ Buckwheat
- 08 ☐ Quinoa

MODULE B: CEREAL

Roster: CEREAL_THIS_GEWOG_ROSTER

B2_2_1. Area sown for <%rostertitle% in DECIMAL>

B2_4. Quantity produced for <%rostertitle% in KG>

B2_3. Did your household lose any <%rostertitle%> during the reference year?

- 01 ○ Yes
- 02 ○ No

B2_3_1. Area lost for <%rostertitle% in DECIMAL>

B2_3_2. Estimated Quantity lost for <%rcontentitle% in KG>

B2_3_3. Select upto 3 reasons for crop loss

- 01 ☐ Wildlife Depredation
- 02 ☐ Natural Calamities
- 03 ☐ Pest and Disease
- 04 ☐ Water shortage
- 05 ☐ Others

B2_5. Did your household sell <%rcontentitle%> during the reference year?

- 01 ○ Yes
- 02 ○ No

B2_5_1. Total quantity sold for <%rcontentitle% in KG>

B2_5_1a. Total quantity sold from home <%rcontentitle% in KG>

B2_5_2. Rate per KG sold from home <%rcontentitle% in Ru.>

B3. Did your household grow any CEREALS in another growing during the reference year?

- 01 ○ Yes
- 02 ○ No

B4. Which Dzongkhag?

B4

11 Bumthang
12 Chhukha
13 Dagana
14 Gasa
15 Haa
16 Lhuentse
17 Monggar
18 Paro
19 Pema Gatshel
20 Punakha
21 Samdrup jongkhar
22 Samtse
23 Sarpang
24 Thimphu
25 Trashigang
26 Trashi Yangtse

B5. Which Gewog?

B5

B5_1. Which Chiwog? V1 IsAnswered(self)	SINGLE-SELECT (COMBO) B5_1 110101 ◯ Nangsiphel_Zangling_Zhabjethang 110102 ◯ Dhur_ Lusibee 110103 ◯ Kharsa_Thangbi 110104 ◯ Dawathang_Dorjibi_Kashingtsawa 110105 ◯ Padtsheling_Tamzhing 110201 ◯ Gyaltsa 110202 ◯ Domkhar 110203 ◯ Phurjoen 110204 ◯ Zung-Ngae 110205 ◯ Choongphel 110301 ◯ Tandingang 110302 ◯ Khangrab 110303 ◯ Kidzom_Nyimalung 110304 ◯ Dazur 110401 ◯ Betang_Pangkhar_Somthrang 110402 ◯ Tangsibi [illegible]
B6_1. What CEREALS did you grow in another Gewog during the reference year? Please select all that apply. E [illegible] V1 IsAnswered(self)	MULTI-SELECT B6_1 01 ☐ Paddy (irrigated) 02 ☐ Paddy(upland) 03 ☐ Maize 04 ☐ Wheat 05 ☐ Barley 06 ☐ Millet(all types) 07 ☐ Buckwheat 08 ☐ Quinoa

MODULE B: CEREAL
Roster: CEREAL_AND_GEWOG_ROSTER
generated by multi-select question B6_1 — cereal_and_gewog_roster
E [illegible]

B6_2_1. Area sown for <%rostertitle% in DECIMAL> I 1 Area=100 decimal V1 self>0 W1 Warning! area sown must be positive. V2 IsAnswered(self) V3 [illegible] W3 are you sure?	NUMERIC: DECIMAL B6_2_1 _
B6_4. Quantity produced for <%rostertitle% in KG> I If produced twice or thrice, it should be summed up to give the total. V1 self>0 W1 Warning! Qty produced must be positive. V2 IsAnswered(self) V3 [illegible] W3 are you sure?	NUMERIC: INTEGER B6_4 _

B6_3. Did your household lose any <%rostertitle%> during the reference year?

I Lost may be due to natural disaster or wildlife predation.
V1 IsAnswered(self)

SINGLE-SELECT B6_3

01 ○ Yes
02 ○ No

B6_3_1. Area lost for <%rostertitle% in DECIMAL>

I 1 Area=100 decimal
E B6_3==1
V1 self<=(B6_2_1 ?? 0)
M1 area lost can't be greater than cases area. Please check
V2 self>0
M2 Warning! area lost must be positive.
V2 IsAnswered(self)

NUMERIC: DECIMAL B6_3_1

_ _

B6_3_2. Estimated Quantity lost for <%rostertitle% in KG>

I If lost twice or thrice, it should be summed up to give the total.
E B6_3==1
V1 self>0
M1 Warning! Qty. lost must be positive.
V2 IsAnswered(self)
V3 self<=(B6_4 ?? 0)
M3 Warning! quantity lost should be less than production

NUMERIC: INTEGER B6_3_2

_ _

B2_3_3. Select upto 3 reasons for crop loss

I Select 3 most prevalent reasons for crop loss during the reference year.
E B6_3==1
V1 IsAnswered(self)

MULTI-SELECT B6_3_3

01 ☐ Wildlife Depredation
02 ☐ Natural Calamities
03 ☐ Pest and Disease
04 ☐ Water shortage
05 ☐ Others

B6_5. Did your household sell <%rostertitle%> during the reference year?

I Sell refers to sale in unraw form irrespective of production years. e.g. the household may have sold from previous year's stock in unraw form.
V1 IsAnswered(self)

SINGLE-SELECT B6_5

01 ○ Yes
02 ○ No

B6_5_1. Total quantity sold for <%rostertitle% in KG>

I The quantity sold should be collected as unraw and not in raw, incase if the farmers has sold as raw then convert it to unraw and enter the data. (e.g. The conversion rate for Rice from paddy=Paddy*%%
And 4 other symbols (2)
E B6_5==1
V1 self>0
M1 Warning! Qty. sold must be positive.
V2 IsAnswered(self)

NUMERIC: INTEGER B6_5_1

_ _

B6_5_1a. Total quantity sold from home for <%rostertitle% in KG>

I This is the quantity sold from home.
E B6_5==1
V1 self<=(B6_5_1 ?? 0)
M1 Qty sold from home should be less than total qty sold.
V2 self>0
M2 production should be positive.
V3 IsAnswered(self)

NUMERIC: INTEGER B6_5_1a

_ _

B6_5_2. Rate per KG sold from home for <%rostertitle%> in Nu.? E B6_5==1 && B6_5_1>0 V1 self>0 M1 Warning! Qty. sold must be positive. W2 self<=[illegible] M2 are you sure? V2 IsAnswered(self)	NUMERIC: INTEGER B6_5_2 _
B7. Did your household grow any CEREALS in yet another gewog during the reference year? I The commonly grown cereal crops include paddy, maize, wheat, barley, millet, buckwheat and quinoa. V1 IsAnswered(self)	SINGLE-SELECT B7 01 O Yes 02 O No
B8. Which Dzongkhag? E B7==1 V1 IsAnswered(self)	SINGLE-SELECT: COMBO BOX B8 11 O Bumthang 12 O Chhukha 13 O Dagana 14 O Gasa 15 O Haa 16 O Lhuentse 17 O Monggar 18 O Paro 19 O Pema Gatshel 20 O Punakha 21 O Samdrup Jongkhar 22 O Samtse 23 O Sarpang 24 O Thimphu 25 O Trashigang 26 O Trashi Yangtse and 2 other symbols [1]
B9. Which Gewog? V1 IsAnswered(self)	SINGLE-SELECT: CASCADING B9 1101 O Chhoekhor 1102 O Chhumig 1103 O Tang 1104 O Ura 1201 O Bjagchhog 1202 O Bongo 1203 O Chapchha 1204 O Darla 1205 O Doongna 1206 O Geling 1207 O Getana 1208 O Loggchina 1209 O Maedtabkha 1210 O Phuentshogling 1211 O Samphelling 1301 O Dorona and 189 other symbols [2]

B9_1. Which Chiwog? V1 IsAnswered(self)	SINGLE-SELECT: CASCADING — b9_1 110101 ○ Nangsiphel_Zangling_Zhabjechang 110102 ○ Dhur_ Lusibee 110103 ○ Kharsa_Thangbi 110104 ○ Dawathang_Dorjibi_Kashingtsawa 110105 ○ Padtsheling_Tamzhing 110201 ○ Gyaltsa 110202 ○ Domkhar 110203 ○ Pharjoen 110204 ○ Zung-Ngae 110205 ○ Choongphel 110301 ○ Tandingang 110302 ○ Khangrab 110303 ○ Kizbom_Nyimalung 110304 ○ Dazur 110401 ○ Bateng_Pangkhar_Somthrang 110402 ○ Tangsibi And [illegible] other options
B10_1. What CEREALS did you grow in yet another Gewog during the reference year? Please select all that apply. E b7==1 V1 IsAnswered(self)	MULTI-SELECT — b10_1 01 ☐ Paddy (irrigated) 02 ☐ Paddy(upland) 03 ☐ Maize 04 ☐ Wheat 05 ☐ Barley 06 ☐ Millet(all types) 07 ☐ Buckwheat 08 ☐ Quinoa

MODULE B: CEREAL
Roster: CEREAL_YETANO_GEWOG_ROSTER
generated by multi-select question b10_1 — cereal_yetano_gewog_roster

E b7==1

B10_2_1. Area sown for <%rostertitle% in DECIMAL> I 1 Acre=100 decimal V1 self>0 M1 Warning! area sown must be positive. V2 IsAnswered(self) W1 self.InRange(CerealArea[@rowcode].minArea*100,CerealArea[@rowcode].maxArea*100) M2 are you sure?	NUMERIC: DECIMAL — b10_2_1 _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
B10_4. Quantity produced for <%rostertitle% in KG> I If produced twice or thrice, it should be summed up to give the total. V1 self>0 M1 Warning! Qty. produced must be positive. V2 IsAnswered(self) W2 self.InRange(CerealProduction[@rowcode].minProduction*100,CerealProduction[@rowcode].maxProduction*1000) M3 are you sure?	NUMERIC: INTEGER — b10_4 _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

B10_3. Did your household lose any <%rostertitle%> during the reference year? I Lost may be due to natural disaster or wildlife predation. V1 [illegible]	SINGLE SELECT [illegible] 01 ◯ Yes 02 ◯ No
B10_3_1. Area lost for <%rostertitle% in DECIMAL> I 1 Acre=100 decimal E B10_3==1 V1 self<=(B10_1_1 ?? 0) M1 area lost can't be greater than sown area. Please check! V2 self>0 M2 Warning! area lost must be positive. V3 [illegible]	NUMERIC: DECIMAL [illegible] _______________
B10_3_2. Estimated Quantity lost for <%rostertitle% in KG> I If lost twice or thrice, it should be summed up to give the total. E B10_3==1 V1 self>0 M1 Warning! Qty. lost must be positive. V2 [illegible] V3 self<=(B10_4 ?? 0) M4 Warning! quantity lost should be less than production.	NUMERIC: INTEGER [illegible] _______________
B2_3_3. Select upto 3 reasons for crop loss I Select 3 most prevalent reasons for crop loss during the reference year. E B10_3==1 V1 [illegible]	MULTI-SELECT [illegible] 01 ☐ Wildlife Depredation 02 ☐ Natural Calamities 03 ☐ Pest and Disease 04 ☐ Water shortage 05 ☐ Others
B10_5. Did your household sell <%rostertitle%> during the reference year? I [illegible] V1 [illegible]	SINGLE SELECT [illegible] 01 ◯ Yes 02 ◯ No
B10_5_1. Total quantity sold for <%rostertitle% in KG> I [illegible] E B10_5==1 V1 self>0 M1 Warning! Qty. sold must be positive. V2 [illegible]	NUMERIC: INTEGER [illegible] _______________
B10_5_1a. Total quantity sold from home for <%rostertitle% in KG> I This is the quantity sold from home. E B10_5==1 V1 self>0 M1 sold should be positive. V2 self<=(B10_5_1 ?? 0) M2 qty sold from home should be less than total qty sold. V3 [illegible]	NUMERIC: INTEGER [illegible] _______________

MODULE C: OILSEEDS

[illegible]

B11. Did your household grow any OILSEEDS during the reference year? [illegible]

I The commonly grown oilseeds are mustard, sunflower, soybean, groundnut and perilla
V1 IsAnswered(self)

SINGLE-SELECT
01 ○ Yes
02 ○ No

B12_1. What OILSEEDS did you grow during the reference year? Please select all that apply. [illegible]

E B11==1
V1 IsAnswered(self)

MULTI-SELECT
01 ☐ Mustard
02 ☐ Sunflower
03 ☐ Soybean
04 ☐ Groundnut
05 ☐ Perilla

MODULE C: OILSEEDS
Roster: OILSEEDS_ROSTER
generated by multi-select question B12_1

[illegible]

B12_2_1. Area sown for <%rostertitle% in DECIMAL> [illegible]

I 1 Area=100 decimal
V1 self>0
M1 Warning! area sown must be positive.
V2 IsAnswered(self)
M3 [illegible]
M3 are you sure?

NUMERIC DECIMAL

____

B12_4. Quantity produced for <%rostertitle% in KG> [illegible]

I If produced twice or thrice, it should be summed up to give the total.
V1 self>0
M1 Warning! Qty. produced must be positive.
V2 IsAnswered(self)
M3 [illegible]
M3 are you sure?

NUMERIC INTEGER

____

B12_3. Did your household lose any <%rostertitle%> during the reference year? [illegible]

I Loss may be due to natural disasters or wildlife predation.
V1 IsAnswered(self)

SINGLE-SELECT
01 ○ Yes
02 ○ No

B12_3_1. Area lost for <%rostertitle% in DECIMAL> [illegible]

I 1 Area=100 decimal
E [illegible]
V1 [illegible]
M1 Area lost can't be greater than sown area. Please check.
V2 self>0
M2 Warning! area lost must be positive.
V3 IsAnswered(self)

NUMERIC DECIMAL

____

B12_3_2. Estimated Quantity lost for <%rostertitle% in KG>

I If lost twice or thrice, it should be summed up to give the total.
E B12_3==1
V1 self>0
M1 Warning: Qty. lost must be positive.
V2 IsAnswered(self)
V3 self<=(B12_4 ?? 0)
M3 Warning: lost can't be greater than production

NUMERIC: INTEGER — B12_3_2

B12_3_3. Select upto 3 reasons for crop loss

I Select 3 most prevalent reasons for crop loss during the reference year.
E B12_3==1
V1 IsAnswered(self)

MULTI-SELECT — B12_3_3

- 01 ☐ Wildlife Depredation
- 02 ☐ Natural Calamities
- 03 ☐ Pest and Disease
- 04 ☐ Water shortage
- 05 ☐ Others

B12_5. Did your household sell <%rostertitle%> during the reference year?

V1 IsAnswered(self)

SINGLE-SELECT — B12_5

- 01 ○ Yes
- 02 ○ No

B12_5_1. Total quantity sold for <%rostertitle% in KG>

E B12_5==1
V1 self<=(B12_4 ?? 0)
M1 sold can not be greater than production. Please check
V2 self>0
M2 Warning: Qty. sold must be positive.
V3 self<=((B12_4 ?? 0)-(B12_3_2 ?? 0))
M3 Quantity sold must be less than the total production minus lost if any.
V4 IsAnswered(self)

NUMERIC: INTEGER — B12_5_1

B12_5_1a. Total quantity sold from home for <%rostertitle% in KG>

I This is the quantity sold from home.
E B12_5==1
V1 self<=(B12_5_1 ?? 0)
M1 Qty sold from home should be less than total qty sold in total.
V2 self>=0
M2 Sold should be positive
V3 IsAnswered(self)

NUMERIC: INTEGER — B12_5_1a

B12_5_2. Rate per KG sold from home for <%rostertitle% in KG>

E B12_5==1 && B12_5_1a>0
V1 self>0
M1 Warning: Qty. sold must be positive.
V2 self.InRange(AllSeedPrice[@rowcode].minPrice, AllSeedPrice[@rowcode].maxPrice)
M2 are you sure?
V3 IsAnswered(self)

NUMERIC: INTEGER — B12_5_2

MODULE D: PULSES

pulses

B13. Did your household grow any PULSES during the reference year?

SINGLE SELECT — B13

01 ○ Yes
02 ○ No

B14_1. What PULSES did you grow during the reference year? Please select all that apply.

MULTI SELECT — B14_1

01 ☐ Beans (DRY)
02 ☐ Lentil
03 ☐ Rajma beans
04 ☐ Mung beans

MODULE D: PULSES
Roster: PULSES_ROSTER
generated by multi-select question B14_1

pulses_roster

B14_2_1. Area sown for <#rostertitle#> in DECIMAL>

NUMERIC DECIMAL — B14_2_1

B14_4. Quantity produced for <#rostertitle#> in KG>

NUMERIC INTEGER — B14_4

B14_3. Did your household lose any <#rostertitle#> during the reference year?

SINGLE SELECT — B14_3

01 ○ Yes
02 ○ No

B14_3_1. Area lost for <#rostertitle#> in DECIMAL>

NUMERIC DECIMAL — B14_3_1

B14_3_2. Estimated Quantity lost for <%rostertitle% in KG> I If lost twice or thrice, it should be summed up to give the total. E B14_3==1 V1 self>0 M1 Warning! Qty. lost must be positive. V2 IsAnswered(self) V3 self<=(B14_4 ?? 0) M2 warning! quantity lost can't be greater than production	NUMERIC: INTEGER B14_3_2 _
B2_3_3. Select upto 3 reasons for crop loss I Select 3 most prevalent reasons for crop loss during the reference year. E B14_3==1 V1 IsAnswered(self)	MULTI-SELECT B14_3_3 01 ☐ Wildlife Depredation 02 ☐ Natural Calamities 03 ☐ Pest and Disease 04 ☐ Water shortage 05 ☐ Others
B14_5. Did your household sell <%rostertitle%> during the reference year? V1 IsAnswered(self)	SINGLE-SELECT B14_5 01 ◯ Yes 02 ◯ No
B14_5_1. Total quantity sold for <%rostertitle% in KG> E B14_5==1 V1 self<=(B14_4 ?? 0) M1 sold can not be greater than production. Please check. V2 self>0 M2 Warning! Qty. sold must be positive. V3 self<=((B14_4 ?? 0)-(B14_3_2 ?? 0)) M3 Quantity sold must be less than the total production minus lost if any. V4 IsAnswered(self)	NUMERIC: INTEGER B14_5_1 _
B14_5_1a. Total quantity sold from home for <%rostertitle% in KG> I This is the quantity sold from home. E B14_5==1 V1 self<=(B14_5_1 ?? 0) M1 Warning! Qty sold from home should be less than total qty sold. V2 self>=0 M2 sold should be positive. V3 IsAnswered(self)	NUMERIC: INTEGER B14_5_1a _
B14_5_2. Rate per KG sold from home for <%rostertitle% in Nu> E B14_5==1 && B14_5_1a>0 V1 self>0 M1 Warning! Qty. sold must be positive. W2 self.InRange(pa1 sesPrice[@rowcode].minPrice, pa1sesPrice[@rowcode].maxPrice) M2 Warning! Please confirm the price V3 IsAnswered(self)	NUMERIC: INTEGER B14_5_2 _

MODULE E: VEGETABLES

B15. Did your household grow any VEGETABLES during the reference year?

SINGLE SELECT
01 ○ Yes
02 ○ No

B15_1. What VEGETABLES did you grow during the reference year? Please select all that apply.

MULTI SELECT
01 ☐ Asparagus
02 ☐ Beans (green/fresh)
03 ☐ Brinjal
04 ☐ Broccoli
05 ☐ Bulb Onion
06 ☐ Bunching Onion/spring onion
07 ☐ Cabbages
08 ☐ Carrot
09 ☐ Cauliflower
10 ☐ Chili
12 ☐ Garlic leaves
13 ☐ Gourd
14 ☐ Green leaves
15 ☐ Peas (green/fresh)
16 ☐ Pumpkin
17 ☐ Radish

MODULE E: VEGETABLES
Roster: VEGETABLES_ROSTER
generated by multi-select question B15_1

B16_2_1. Area sown for <fi rosterTitle% in DECIMAL>

NUMERIC: DECIMAL

B16_4. Quantity produced for <fi rosterTitle% in KG>

NUMERIC: INTEGER

B16_3. Did your household lose any <%rostertitle%> during the reference year? I Lost may be due to natural disaster or wildlife predation. E @rowcode==1 || @rowcode==2 || @rowcode==3 || @rowcode==4 || @rowcode==5 || @rowcode==6 || @rowcode==7 || @rowcode==8 || @rowcode==9 || @rowcode==10 || @rowcode==15 || @rowcode==17 || @rowcode==18 || @rowcode==20 V1 IsAnswered(self)	SINGLE-SELECT B16_3 01 ○ Yes 02 ○ No
B16_3_1. Area lost for <%rostertitle% in DECIMAL> I 1 Acre=100 decimal E B16_3==1 V1 self<=(B16_2_1 ?? 0) M1 area lost can't be greater than sown area. Please check V2 self>0 M2 Warning! area lost must be positive. V3 IsAnswered(self)	NUMERIC: DECIMAL B16_3_1 ____________________
B16_3_2. Estimated Quantity lost for <%rostertitle% in KG> I If lost twice or thrice, it should be summed up to give the total. E B16_3==1 V1 self>0 M1 Warning! Qty. lost must be positive. V2 IsAnswered(self) V3 self<=(B16_4 ?? 0) M3 Warning! lost can't be greater than production	NUMERIC: INTEGER B16_3_2 ____________________
B2_3_3. Select upto 3 reasons for crop loss I Select 3 most prevalent reasons for crop loss during the reference year. E B16_3==1 V1 IsAnswered(self)	MULTI-SELECT B16_3_3 01 ☐ Wildlife Depredation 02 ☐ Natural Calamities 03 ☐ Pest and Disease 04 ☐ Water shortage 05 ☐ Others
B16_5. Did your household sell <%rostertitle%> during the reference year? V1 IsAnswered(self)	SINGLE-SELECT B16_5 01 ○ Yes 02 ○ No
B16_5_1. Total quantity sold for <%rostertitle% in KG> E B16_5==1 V1 self<=(B16_4 ?? 0) M1 sold can not be greater than production. Please check V2 self>0 M2 Warning! Qty. sold must be positive. V3 self<=((B16_4 ?? 0)-(B16_3_2 ?? 0)) M3 Quantity sold must be less than the total production minus lost if any. V4 IsAnswered(self)	NUMERIC: INTEGER B16_5_1 ____________________
B16_5_1a. Total quantity sold from home for <%rostertitle% in KG> I This is the quantity sold from home. E B16_5==1 V1 self>=0 M1 sold should be positive. V2 self<=(B16_5_1 ?? 0) M2 Qty sold from home should be less than total qty sold. V3 IsAnswered(self)	NUMERIC: INTEGER B16_5_1A ____________________

MODULE F: SPICES

spices

B17. Did your household grow any SPICES during the reference year in this gewog?

I The commonly grown spices include cardamom, ginger, turmeric, garlic bulb and coriander.
V1 IsAnswered(self)

SINGLE-SELECT — B17
- 01 ◯ Yes
- 02 ◯ No

B18_1. What SPICES did you grow during the reference year? Please select all that apply.

E B17==1
V1 IsAnswered(self)

MULTI-SELECT — b18_1
- 01 ☐ Cardamom
- 02 ☐ Ginger
- 03 ☐ Turmeric
- 04 ☐ Garlic bulb
- 05 ☐ Coriander

MODULE F: SPICES
Roster: SPICES_ROSTER
generated by multi-select question B18_1

spices_roster

B18_2_1. Area sown for <%rostertitle% in DECIMAL>

I 1 Acre=100 decimal
V1 self>0
M1 Warning! area sown must be positive.
V2 IsAnswered(self)
V3 [illegible]
M3 are you sure?

NUMERIC: DECIMAL — b18_2_1

____

B18_4. Quantity produced for <%rostertitle% in KG>

V1 self>0
M1 Warning! Qty produced must be positive.
V2 IsAnswered(self)
V3 [illegible]
M3 are you sure?

NUMERIC: INTEGER — b18_4

____

B18_3. Did your household lose any <%rostertitle%> during the reference year?

I Lost may be due to natural disaster or wildlife predation.
V1 IsAnswered(self)

SINGLE-SELECT — b18_3
- 01 ◯ Yes
- 02 ◯ No

B18_3_1. Area lost for <%rostertitle% in DECIMAL>

I 1 Acre=100 decimal
E b18_3==1
V1 self<=(b18_2_1 [illegible])
M1 area lost can't be greater than sown area. Please check!
V2 [illegible]
M2 Warning! area lost must be positive.
V3 IsAnswered(self)

NUMERIC: DECIMAL — b18_3_1

____

B18_3_2. Estimated Quantity lost for <%rostertitle% in KG> I If lost twice or thrice, it should be summed up to give the total. E B18_3==1 V1 self!=0 M1 Warning: Qty. lost must be positive. V2 [illegible] V3 self [illegible] (B18_4 ?? 0) M3 Warning: lost can't be greater than production.	NUMERIC: INTEGER B18_3_2 - - - - - - - - - - - - - - - - - -
B2_3_3. Select upto 3 reasons for crop loss I Select 3 most prevalent reasons for crop loss during the reference year. E B18_3==1 V1 [illegible]	MULTI-SELECT B18_3_3 01 ☐ Wildlife Depredation 02 ☐ Natural Calamities 03 ☐ Pest and Disease 04 ☐ Water shortage 05 ☐ Others
B18_5. Did your household sell <%rostertitle%> during the reference year? V1 [illegible]	SINGLE-SELECT B18_5 01 ◯ Yes 02 ◯ No
B18_5_1. Total quantity sold for <%rostertitle% in KG> E B18_5==1 V1 self [illegible] (B18_4 ?? 0) M1 sold can not be greater than production. Please check V2 self [illegible] 0 M2 Warning: Qty. sold must be positive. V3 self [illegible] ((B18_4 ?? 0) - (B18_3_2 ?? 0)) M3 Quantity sold must be less than the total production minus lost if any. V4 [illegible]	NUMERIC: INTEGER B18_5_1 - - - - - - - - - - - - - - - - - -
B18_5_1a. Total quantity sold from home for <%rostertitle% in KG> I This is the quantity sold from home. E B18_5==1 V1 self [illegible] (B18_5_1 ?? 0) M1 Qty sold from home shouldn't be greater than total qty sold. V2 self [illegible] M2 sold should be positive V3 [illegible]	NUMERIC: INTEGER B18_5_1a - - - - - - - - - - - - - - - - - -
B18_5_2. Rate per KG sold from home for <%rostertitle% in Nu> E B18_5==1 && B18_5_1a>0 V1 self!=0 M1 Warning: Qty. sold must be positive. W2 [illegible] M2 are you sure? V3 [illegible]	NUMERIC: INTEGER B18_5_2 - - - - - - - - - - - - - - - - - -
B18_6. Did your household grow any Cardamom during the reference year in other gewog? E [illegible] V1 [illegible]	SINGLE-SELECT B18_6 01 ◯ Yes 02 ◯ No

B18_7. Which Dzongkhag? E [illegible] V1 [illegible]	SINGLE-SELECT: COMBO BOX 11 ○ Bumthang 12 ○ Chhukha 13 ○ Dagana 14 ○ Gasa 15 ○ Haa 16 ○ Lhuentse 17 ○ Monggar 18 ○ Paro 19 ○ Pema Gatshel 20 ○ Punakha 21 ○ Samdrup Jongkhar 22 ○ Samtse 23 ○ Sarpang 24 ○ Thimphu 25 ○ Trashigang 26 ○ Trashi Yangtse [illegible]	B18_7
B18_8. Which Gewog? V1 [illegible]	SINGLE-SELECT: CASCADING 1101 ○ Chhoekhor 1102 ○ Chhumig 1103 ○ Tang 1104 ○ Ura 1201 ○ Bjagchhog 1202 ○ Bongo 1203 ○ Chapchha 1204 ○ Darla 1205 ○ Doongna 1206 ○ Geling 1207 ○ Getana 1208 ○ Loggchina 1209 ○ Maedtabkha 1210 ○ Phuentshogling 1211 ○ Sampheling 1301 ○ Dorona [illegible]	[illegible]

B18_9.Which Chiwog? V1 [illegible]	[illegible] B18_9 [illegible] ○ Nangsiphel_Zangling_Zhabjathang [illegible] ○ Dhur_Lusibee [illegible] ○ Kharsa_Thangbi [illegible] ○ Dawathang_Dorjibi_Keshingtsawa [illegible] ○ Pedtsheling_Tamzhing [illegible] ○ Gyaltsa [illegible] ○ Domkhar [illegible] ○ Phurjoen [illegible] ○ Zang-Ngae [illegible] ○ Choongphel [illegible] ○ Tandingang [illegible] ○ Khangrab [illegible] ○ Kidsom_Nyimalung [illegible] ○ Dazur [illegible] ○ Betang_Fangkhar_Somthrang [illegible] ○ Tangsibi [illegible]
B18_10. Area sown in DECIMAL I 1 Acre=100 decimal E [illegible] V1 self>0 M1 Warning! area sown must be positive. V2 IsAnswered(self) W3 self.InRange(0.1, [illegible]) M3 are you sure?	[illegible] B18_10 -
B18_15. Quantity produced in KG E [illegible] V1 self>0 M1 Warning! Qty produced must be positive. V2 IsAnswered(self) W3 self.InRange([illegible]) M3 are you sure?	[illegible] B18_15 -
B18_11. Did your household loss any during the reference year? I Loss may be due to natural disaster or wildlife predation. E [illegible] V1 IsAnswered(self)	[illegible] B18_11 [illegible] ○ Yes [illegible] ○ No
B18_12. Area lost in DECIMAL I 1 Acre=100 decimal E [illegible] V1 [illegible] M1 area lost can't be greater than sown area. Please check! V2 self>0 M2 Warning! area lost must be positive. V3 IsAnswered(self)	[illegible] B18_12 -

B18_13. Estimated Quantity lost in KG

NUMERIC INTEGER — B18_13

B18_14. Select upto 3 reasons for crop loss

MULTISELECT — B18_14

(1) ☐ Wildlife Degradation
(2) ☐ Natural Calamities
(3) ☐ Pest and Disease
(4) ☐ Water shortage
(5) ☐ Others

B18_16. Did your household sell during the reference year?

SINGLE SELECT — B18_16

(1) ○ Yes
(2) ○ No

B18_16_1. Total qty sold in KG

NUMERIC INTEGER — B18_16_1

B18_16_1a. Total quantity sold in KG from home

NUMERIC INTEGER — B18_16_1a

B18_16_2. Rate per KG sold from home in Nu

NUMERIC INTEGER — B18_16_2

MODULE G: ROOTS AND TUBERS

roots_tuber

B19. Did your household grow any ROOTS & TUBERS during the reference year?

I The commonly grown roots and tubers include potato, sweet potato, cassava (tapioca), taro (gaduki/colocasia) and ground apple.
VI IsAnswered(self)

SINGLE-SELECT B19

01 ◯ Yes
02 ◯ No

B20. What ROOTS & TUBERS did you grow during the reference year? Please select all that apply.

E B19==1
VI IsAnswered(self)

MULTI-SELECT B20

01 ☐ Potato
02 ☐ Sweet Potato
03 ☐ Cassava/Tapioca
04 ☐ Taro/Yautia/Collocasia
05 ☐ Ground apple

MODULE G: ROOTS AND TUBERS

Roster: ROOTSANDTUBER_ROSTER

generated by multi-select question B20

rootsandtuber_roster

B21_2_1. Area sown for <%rostertitle% in DECIMAL>

I 1 Acre=100 decimal
V1 self>0
M1 Warning! area sown must be positive.
V2 IsAnswered(self)
W3 [illegible]
M3 are you sure?

NUMERIC: DECIMAL B21_2_1

B21_4. Quantity produced for <%rostertitle% in KG>

V1 self>0
M1 Warning! Qty. production must be positive.
V2 IsAnswered(self)
W3 [illegible]
M3 are you sure?

NUMERIC: INTEGER B21_4

B21_3. Did your household lose any <%rostertitle%> during the reference year?

I Lost may be due to natural disaster or wildlife predation.
VI IsAnswered(self)

SINGLE-SELECT B21_3

01 ◯ Yes
02 ◯ No

B21_3_1. Area lost for <%rostertitle% in DECIMAL>

I 1 Acre=100 decimal
E B21_3==1
V1 self<=(B21_2_1 ?? 0)
M1 area lost can't be greater than sown area. Please check.
V2 self>0
M2 Warning! area lost must be positive.
V3 IsAnswered(self)

NUMERIC: DECIMAL B21_3_1

B21_3_2. Estimated Quantity lost for <%rostertitle% in KG> I If lost below or thrice, it should be summed upto give the total. E B21_3==1 V1 self>0 M1 Warning! Qty. lost must be positive. V2 IsAnswered(self) V4 self<=(B21_4 ?? 0) M4 Warning! lost can't be greater than production	NUMERIC: INTEGER B21_3_2
B2_3_3. Select upto 3 reasons for crop loss I Select 3 most prevalent reasons for crop loss during the reference year. E B21_3==1 V1 IsAnswered(self)	MULTISELECT B21_3_3 01 ☐ Wildlife Depredation 02 ☐ Natural Calamities 03 ☐ Pest and Disease 04 ☐ Water shortage 05 ☐ Others
B21_5. Did your household sell <%rostertitle%> during the reference year? V1 self<=B21_4 M1 sold can not be greater than production. Please check V2 IsAnswered(self)	SINGLE-SELECT B21_5 01 ○ Yes 02 ○ No
B21_5_1. Total quantity sold for <%rostertitle% in KG> E B21_5==1 V1 self<=(B21_4 ?? 0) M1 sold can not be greater than production. Please check V2 self>0 M2 Warning! Qty. sold must be positive. V3 self<=((B21_4 ?? 0)-(B21_3_2 ?? 0)) M3 Warning! sold should be production minus lost if any. V4 IsAnswered(self)	NUMERIC: INTEGER B21_5_1
B21_5_1a. Total quantity sold from home for <%rostertitle% in KG> I This is the quantity sold from home. E B21_5==1 V1 self<=(B21_5_1 ?? 0) M1 Warning! Qty. sold from home can't be greater than the total qty. sold. V2 self>0 M2 sold should be positive V3 IsAnswered(self)	NUMERIC: INTEGER B21_5_1a
B21_5_2. Rate per KG sold from home for <%rostertitle% in Nu> E B21_5==1 && B21_5_1a>0 V1 self>0 M1 Warning! Qty. sold must be positive. V2 self.InRange(rostertable.min...(@rowcode).minprice, rostertable.maxprice(@rowcode).maxprice) M2 are you sure? V3 IsAnswered(self)	NUMERIC: INTEGER B21_5_2

MODULE H: FRUITS

Fruits

B21. Did your household grow any FRUIT CROPS in this gewog during the reference year?

V1 [illegible]

SINGLE-SELECT — B21

01 ◯ Yes
02 ◯ No

B22_1. What FRUIT CROPS did you grow? Please select all that apply.

E B21==1
V1 !answered (self)

MULTI-SELECT — B22_1

01 ☐ Apple
02 ☐ Apricot
03 ☐ Arecanut
04 ☐ Avocado
05 ☐ Banana
06 ☐ Dragon fruit
07 ☐ Guava
08 ☐ Hazelnut
09 ☐ Jackfruit
10 ☐ Kiwi
11 ☐ Lemons and Limes
12 ☐ Litchi
13 ☐ Mandarin
14 ☐ Mango
15 ☐ Papaya
16 ☐ Passion Fruit

And 10 other symbols [11]

MODULE H: FRUITS

Roster: FRUITS_THIS_GEWOG_ROSTER

generated by multi-select question B22_1 — fruits_this_gewog_roster

B22_1a. Area sown for <%rostertitle% in DECIMAL>

I 1 Acre=100 decimal
E [illegible]
V1 self>0
M1 Warning! area sown must be positive.
V2 !answered (self)
W3 self.InRange(0.5, 200)
M3 are you sure?

NUMERIC: DECIMAL — B22_1a

B22_1b. Did your household lose any <%rostertitle%> during the reference year?

I Lost may be due to natural disaster or wildlife predation.
E [illegible]
V1 !answered (self)

SINGLE-SELECT — B22_1b

01 ◯ Yes
02 ◯ No

B22_1c. Area lost for <%rostertitle% in DECIMAL>

I 1 Acre=100 decimal
E B22_1b==1
V1 self>0
M1 Warning! area lost must be positive.
V2 !answered (self)

NUMERIC: DECIMAL — B22_1c

B22_2. Total number of <%rostertitle%> trees

E @rowcode<25
V1 self>0
M1 Warning! amount own must be positive.
V2 IsAnswered(self)

NUMERIC: INTEGER — B22_2

B22_3. Bearing number of <%rostertitle%> trees

E @rowcode<25
V1 self>0
V2 self<=B22_2
M2 Warning! Bearing trees must be less than total trees.
V3 IsAnswered(self)
W4 self.InRange(fruitsbearingtrees[@rowcode].minbearingtrees, fruitsbearingtrees[@rowcode].maxbearingtrees)
M4 are you sure?

NUMERIC: INTEGER — B22_3

B22_5. Quantity produced for <%rostertitle% in KG>

E (B22_3>0) || (@rowcode<24)
V1 self>=0
M1 are you sure?
W2 self<=(B22_3*0.100)
M2 are you sure?
V3 IsAnswered(self)
W4 self.InRange(fruitsproduction[@rowcode].minproduction*1000, fruitsproduction[@rowcode].maxproduction*1000)
M4 are you sure?

NUMERIC: INTEGER — B22_5

B22_4. Did your household lose any <%rostertitle%> bearing trees during the reference year?

I Bearing tree lost may be due to natural disaster or wildlife predation
E @rowcode<25
V1 IsAnswered(self)

SINGLE SELECT — B22_4
01 ○ Yes
02 ○ No

B22_4_1. Number of <%rostertitle%> bearing trees lost

E B22_4==1
V1 self<=B22_3
M1 trees lost can't be greater than total trees. Please check!
V2 self>0
M2 Warning! trees lost must be positive.
V3 IsAnswered(self)

NUMERIC: INTEGER — B22_4_1

B22_4_2. Estimated Quantity lost for <%rostertitle% in KG>

I If lost twice or thrice, it should be summed up to give the total.
E B22_4==1
V1 self>0
M1 Warning! Qty. lost must be positive.
V2 IsAnswered(self)

NUMERIC: INTEGER — B22_4_2

B2_3_3. Select upto 3 reasons for crop loss

I Select 3 most prevalent reasons for crop loss during the reference year.
E B22_4==1
V1 IsAnswered(self)

MULTISELECT — B22_4_3
01 ☐ Wildlife Depredation
02 ☐ Natural Calamities
03 ☐ Pest and Disease
04 ☐ Water shortage
05 ☐ Others

B22_6. Did your household sell <%rostertitle%> during the reference year? E B22_5>0 V1 IsAnswered(self)	SINGLE-SELECT B22_6 01 ◯ Yes 02 ◯ No
B22_6_1. Total quantity sold for <%rostertitle% in KG> E B22_6==1 V1 self<=B22_5 M1 sold can not be greater than production. Please check V2 self>0 M2 Warning! Qty. sold must be positive. V3 self<=((B22_5 ?? 0)-(B22_4_2 ?? 0)) M3 Quantity sold must be less than the total production minus lost if any. V4 IsAnswered(self)	NUMERIC: INTEGER B22_6_1 ______________________
B22_6_1a. Total quantity sold from home for <%rostertitle% in KG> I This is the quantity sold from home. E B22_6==1 V1 self<=(B22_6_1 ?? 0) M1 Warning! sold from home can't be greater than total sold. V2 self>=0 M2 Warning! sold should be positive. V3 IsAnswered(self)	NUMERIC: INTEGER B22_6_1a ______________________
B22_6_2. Rate per KG sold from home for <%rostertitle% in Nu> E B22_6==1 && B22_6_1a>0 V1 self>0 M1 Warning! Qty. sold must be positive. V2 self.InRange(fruitcropprice[@rowcode].minprice, fruitcropprice[@rowcode].maxprice) M2 are you sure? V3 IsAnswered(self)	NUMERIC: INTEGER B22_6_2 ______________________
B23. Did your household grow any FRUIT CROPS in another gewog during the reference year? V1 IsAnswered(self)	SINGLE-SELECT B23 01 ◯ Yes 02 ◯ No

B24. Which Dzongkhag?	[illegible] B24
[illegible]	11 ○ Bumthang
[illegible]	12 ○ Chhukha
	13 ○ Dagana
	14 ○ Gasa
	15 ○ Haa
	16 ○ Lhuentse
	17 ○ Monggar
	18 ○ Paro
	19 ○ Pema Gatshel
	20 ○ Punakha
	21 ○ Samdrup Jongkhar
	22 ○ Samtse
	23 ○ Sarpang
	24 ○ Thimphu
	25 ○ Trashigang
	26 ○ Trashi Yangtse
	And 4 other symbols (2)
B25. Which Gewog?	[illegible] B25
[illegible]	1101 ○ Chhoekhor
	1102 ○ Chhumig
	1103 ○ Tang
	1104 ○ Ura
	1201 ○ Bjagchhog
	1202 ○ Bonga
	1203 ○ Chapcha
	1204 ○ Doria
	1205 ○ Doongna
	1206 ○ Geling
	1207 ○ Getana
	1208 ○ Loggchina
	1209 ○ Mwedakha
	1210 ○ Phuentshogling
	1211 ○ Samphelling
	1401 ○ Dorona
	And 19 other symbols (2)

B25_1. Which Chiwog? VI (answered(self))	SINGLE-SELECT: CASCADING — B25_1 110101 ○ Nangsiphel_Zangling_Zhabjethang 110102 ○ Dhur_Lusibee 110103 ○ Kharsa_Thangbi 110104 ○ Dawathang_Dorjibi_Kashingtsawa 110105 ○ Pedtsheling_Tamzhing 110201 ○ Gyaltsa 110202 ○ Domkhar 110203 ○ Phurjoen 110204 ○ Zung-Ngae 110205 ○ Choongphel 110301 ○ Tandingang 110302 ○ Khangrab 110303 ○ Kidzom_Nyimalung 110304 ○ Dazur 110401 ○ Beteng_Pangkhar_Somthrang 110402 ○ Tangsibi And 1037 other symbols [1]
B26_1. What FRUIT CROPS did you grow during the reference year? Please select all that apply. E B21==1 VI (answered(self))	MULTI-SELECT — B26_1 01 ☐ Apple 02 ☐ Pear 03 ☐ Peach 04 ☐ Plum 05 ☐ Apricot 06 ☐ Persimmon 07 ☐ Passion Fruit 08 ☐ Walnut 09 ☐ Lemons and Limes 10 ☐ Arecanut 11 ☐ Mandarin 12 ☐ Hazelnut 13 ☐ Mango 14 ☐ Guava 15 ☐ Pomegranate 16 ☐ Avocado And 8 other symbols [12]

MODULE H: FRUITS

Roster: FRUITS_AND_GEWOG_ROSTER

generated by multi-select question B26_1 — fruits_and_gewog_roster

B26_2. Total number of <%rostertitle%> trees V1 self>0 M1 Warning! answer must be positive. V2 (answered(self))	NUMERIC: INTEGER — B26_2 -

B26_3. Bearing number of <%rostertitle%> trees. V1 self>=0 V2 self<=B26_2 M2 Warning! Bearing trees must be less than total trees. V3 IsAnswered(self) W4 self.InRange(fruitbearingtrees[@rowcode].minbearingtrees, fruitbearingtrees[@rowcode].maxbearingtrees) M4 are you sure?	NUMERIC: INTEGER B26_3 ________________
B26_5. Quantity produced for <%rostertitle% in KG> E (B26_3>0) || (@rowcode<26) V1 self>=0 M1 Warning! Qty. produced must be positive. W2 self!=(B26_3*0.50) M2 are you sure? V3 IsAnswered(self) W4 self.InRange(fruitsproduction[@rowcode].minproduction*0.50, fruitsproduction[@rowcode].maxproduction*1000) M4 are you sure?	NUMERIC: INTEGER B26_5 ________________
B26_4. Did your household lose any <%rostertitle%> bearing trees during the reference year? I Bearing trees lost may be due to natural disasters or wildlife predation. V1 IsAnswered(self)	SINGLE-SELECT B26_4 01 ○ Yes 02 ○ No
B26_4_1. Number of <%rostertitle%> bearing trees lost E B26_4==1 V1 self<=B26_2 M1 trees lost can't be greater than total trees. Please check! V2 self>0 M2 Warning! tree lost must be positive. V3 IsAnswered(self)	NUMERIC: INTEGER B26_4_1 ________________
B26_4_2. Estimated Quantity lost for <%rostertitle% in KG> I If lost twice or thrice, it should be summed up to give the total. E B26_4==1 V1 self>0 M1 Warning! Qty. lost must be positive. V2 IsAnswered(self)	NUMERIC: INTEGER B26_4_2 ________________
B2_2_3. Select upto 3 reasons for crop loss I Select 3 most prevalent reasons for crop loss during the reference year. E B26_4==1 V1 IsAnswered(self)	MULTI-SELECT B26_4_3 01 ☐ Wildlife Depredation 02 ☐ Natural Calamities 03 ☐ Pest and Disease 04 ☐ Water shortage 05 ☐ Others
B26_6. Did your household sell <%rostertitle%> during the reference year? E B26_5>0 V1 IsAnswered(self)	SINGLE-SELECT B26_6 01 ○ Yes 02 ○ No

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