

**FALLOW LAND STATUS AND DISTRIBUTION IN PILOT SURVEY  
AREAS: – EXPLORING INNOVATIVE IDEAS TO BRING IT UNDER  
PRODUCTIVE AGRICULTURAL USE**



**A collaborative initiative between the Ministry of Agriculture and  
Forests and National Land Commission Secretariat**

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## 1. Introduction

Bhutan is an agrarian country with more than 51% of its population dependent on agriculture as a main source of livelihood. Crop-livestock integration dominates the agriculture farming system. Agriculture development is constrained by limited arable land, which constitute about 7% (664,000 acres) of the total geographical area. More than 31% of the total agriculture land is situated on slopes as steep as 50% (NSSC, 2014). Currently, 2.93% (278,013.84 acres) of the total arable land is under cultivation with 172,086.85 acres under *kamzhing* and 77,462 acres under *chhuzhing*. According to the RNR census 2019, total fallow land accounts for 66,120.28 acres comprising 82.5% dryland, 13.55% wetland and 3.86% others. Majority of these fallow land of about 65,116.92 acres are owned by individual households. The primary factors contributing to keeping land fallow are labor shortage, lack of irrigation facilities, water shortage, human wildlife conflict and accessibility. The major issues resulting from fallow land include attraction of wild animals thereby exacerbating crop and livestock damages and discouraging active farmers from cultivating their land.

Increasing incidences of leaving the land fallow has a direct impact on National food security and import dependency. While the issue of fallow land is much talked about, there is no clear definition of what fallow land is in Bhutanese context. However, there are several definition of fallow land at the International level - 1) “Fallowing is the management practice of leaving land in an uncropped state for a period of time prior to sowing another crop with purpose to allow for the accumulation and retention of water and mineralised nutrients in the soil, and generally to also allow for weed control” (OECD) and 2) “Fallow agricultural land refers to arable land not under rotation that is set aside for a period of time ranging from one to five years before it is cultivated again; or land, usually under permanent crops, meadows or pastures, that is not being used for such purposes for a period of at least one year” (UN).

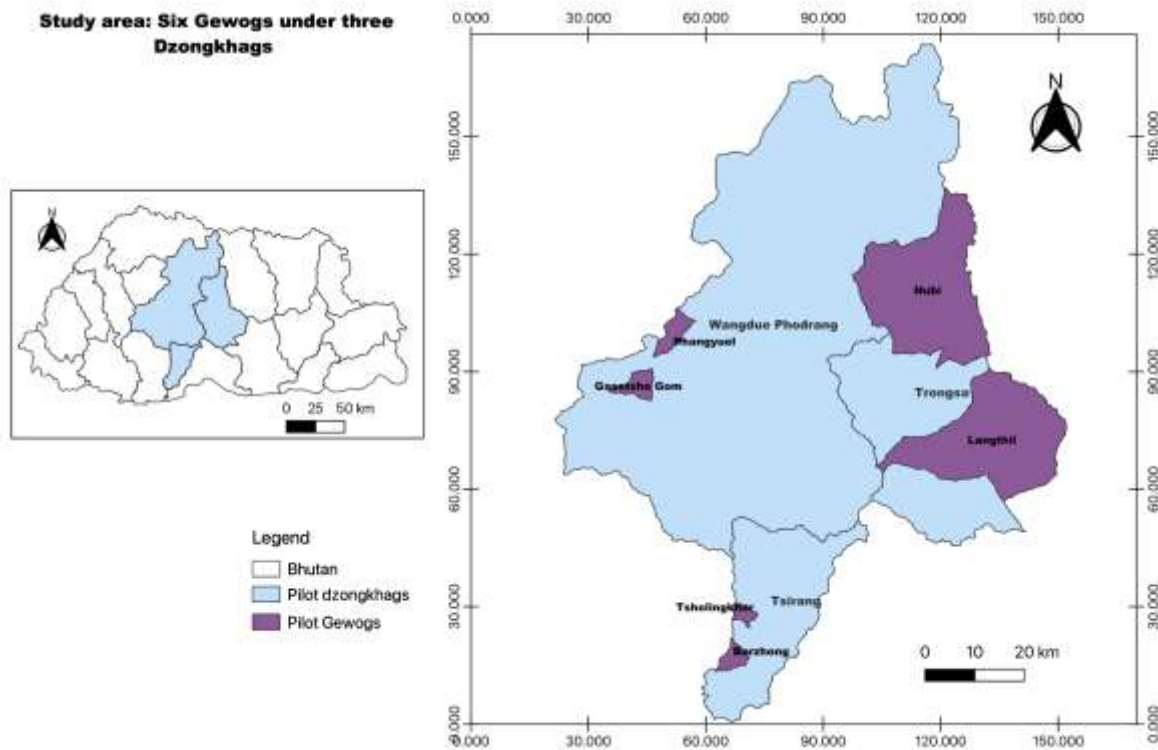
The Government had intensified and upscaled land development, rehabilitation and reversion of fallow land into productive use in 12 Five Year Plan (FYP) to address fallow land issue. Despite such Government interventions progress remained slow and farmers continue to leave their lands fallow owing to various constraints coupled with inadequate favorable policy measures. So far, only about 1276 acres of fallow land have been reverted into cultivation. Paradoxically, while about 66,120 acres of privately owned land remained fallow, the pressure and justifications on leasing the State Reserve Forests (SRF) land for crop and livestock farming, and other economic activities is ever increasing. As of 2020, 10,788 acres and 113 acres of the State land are on lease and under Land Use Certificate (LUC), respectively.

There is therefore a need to introduce and implement appropriate creative ideas to collaborate, coordinate, forge partnerships and propose strategic measures to revert privately owned fallow land to productive agricultural use. Fallow Land Bank (FLB) initiative is found feasible and adopted in some countries to revert fallow land for productive use. As Bhutan has a large area of fallow land it will be worth capitalizing the FLB approach as a platform to revert fallow land to productive use. However, before adoption of such an initiative, it will be imperative to explore and understand the current field status and farmers views pertaining to why land was left fallow and interventions made so far to address the fallow land issue. Therefore, this survey was conducted to understand and document current status, distribution, and land owners' views on fallow land in selected pilot sites.

## 2. Materials and methods

### 2.1 Pilot sites

Three Dzongkhags: Trongsa, Tsirang and Wangdue Phodrang, and six Gewogs: Barshong, Tsholingkhar, Gasetsho Gom, Phangyul, Nubi and Langthel were selected purposively for this pilot survey considering its easy access from the capital city, and holding of large fallow land area as compared to other places (Figure 1).



**Figure 1:** Map showing pilot survey sites.

### 2.2 Data collection

The data were collected online from land owners owning fallow land in google form through face-to-face interview using semi-structured questionnaires by the respective Gewog Agriculture Extension Supervisors and Dzongkhag Land Sector Officials of the pilot study sites. Initially, the questionnaire was developed by the task force members — a group of technical experts from the National Land Commission Secretariat (NLCS) and Ministry of Agriculture and Forests (MoAF). The questionnaire was further refined to simplify the data collection process based on consultation with relevant stakeholders particularly the Local Government (LG). The questionnaire consists of both open and closed ended questions intended to capture relevant information pertaining to fallow land status.

### 2.3 Data analysis

Data in google form was downloaded into excel format. Variables with complete response or record were identified and used as reference to clean the data. Data for variables such as citizenship identity card (CID), contact number, respondent name and Gewog name were found

complete. As such, CID number was used to group the plots belonging to the same individual and accordingly the total number of household respondents was determined. Plots without area are deleted for the analysis.

After cleaning the data in excel format the variables were coded and transferred to the Statistical Packages for Social Science (SPSS) version 26 for the statistical analysis. Based on the type of data gathered, descriptive statistics – mean, frequency count and crosstabulation were administered to deduce the finding of this pilot survey.

### 3. Findings of the survey

#### 3.1 Respondents and fallow land plots owned

Of the total 3256 fallow land plots recorded in this pilot survey, data were found complete for 3125 plots. With consolidation of those plots under the same individual using CID as a reference the plots were observed to be owned by 1063 individuals – 194 in Tsirang, 279 in Wangdue Phodrang and 590 in Trongsa. Overall, the average number of fallow land plots recorded was 2.51 plots with 1.48 plots in Tsirang, 2.33 plots in Wangdue and 3.71 plots in Trongsa district (Table 1).

**Table 1:** Total respondents and average number of fallow land plots owned by survey sites

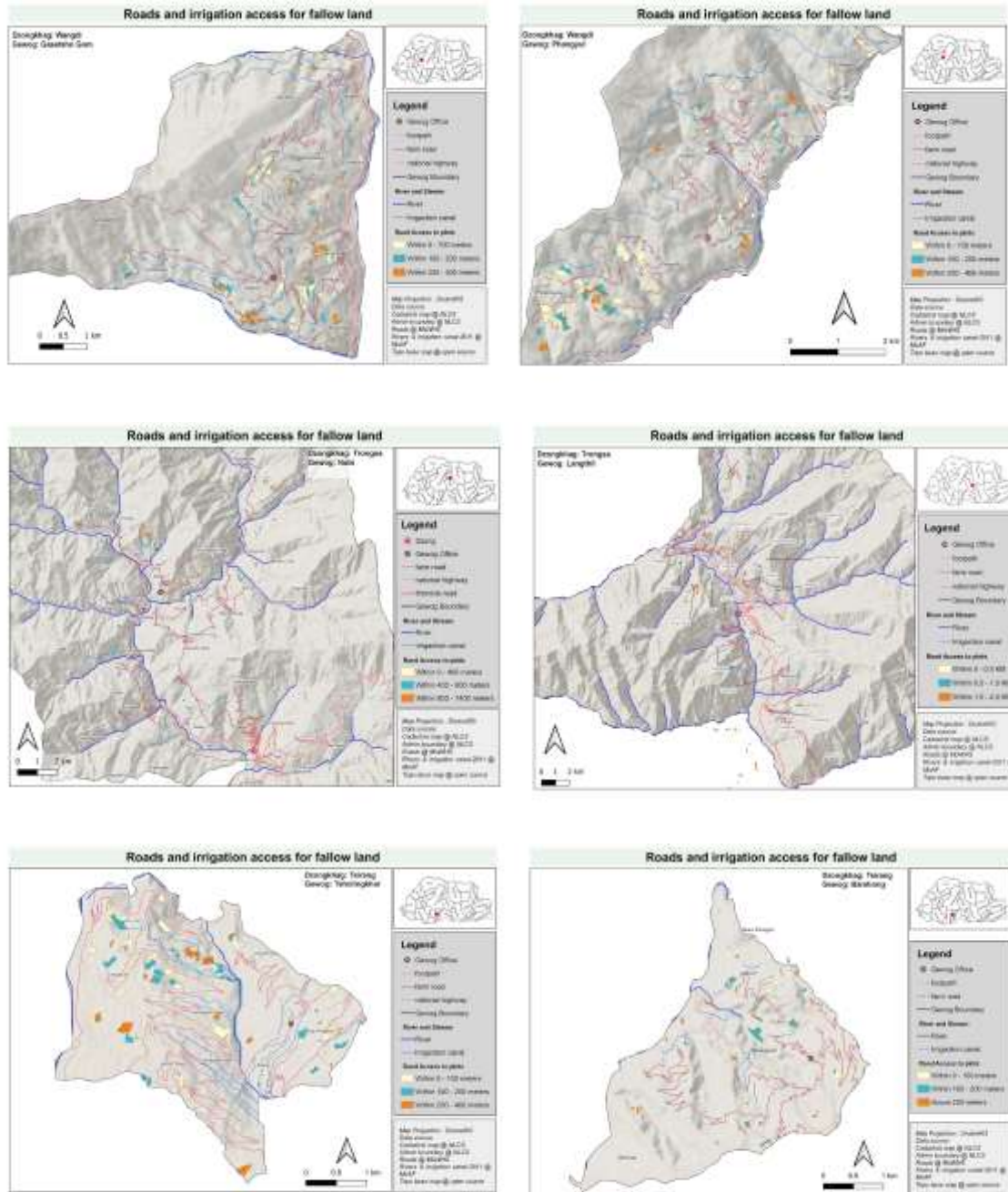
Dzongkhag	Gewog	Number of plots	Number of Household	Average number of plots owned
<b>Tsirang</b>		<b>287</b>	<b>194</b>	<b>1.48</b>
	Tsolingkhar	162	116	1.40
	Barshong	125	78	1.60
<b>Wangdue Phodrang</b>		<b>650</b>	<b>279</b>	<b>2.33</b>
	Phangyul	350	143	2.48
	Gasetsho Gom	300	136	2.21
<b>Trongsa</b>		<b>2188</b>	<b>590</b>	<b>3.71</b>
	Langthel	1093	331	3.30
	Nubi	1098	259	4.23
<b>Total</b>		<b>3125</b>	<b>1063</b>	<b>2.51</b>

#### 3.2 Fallow land status

Arable land is left either partial or complete fallow owing to various reasons. Some of the major causes reported for leaving the land fallow were labour shortage, lack of water or irrigation facilities, human wildlife conflict, and location of plots far away from the human settlement areas and other infrastructure facilities (Table 2). Considering the response in the survey, it was recorded that more than 50% of the fallow lands are located at a distance more than 3 Km from the settlement areas. Whereas, more than 50% of fallow lands have easy access to road and irrigation facilities within three Km (Figure 2). Of the total 3125 plots recorded – 3027 plots and 98 plots were reported under complete and partial fallow, respectively. Fallow land was found registered under different ownerships namely individual, family and joint ownership. In this survey, the majority of fallow land belongs to family ownership (2658 plots) followed by individual (361 plots) and joint ownership (106 plots).

**Table 2:** Location of fallow lands from different infrastructure facilities

Distance	Settlement	Road	Irrigation
More than 6 KM	502	241	121
3-6 KM	224	119	143
0-3 KM	644	515	347
Total	1370	875	611



**Figure 2:** Proximity of roads and irrigation facilities for fallow land

The respondents reported the length of land kept fallow in five points scale starting less than one year to more than ten years. It was recorded that all land categories - *Kamzhing*, *chhuzhing*, *orchard* and *Khimsa* were left fallow, and the length for leaving the land fallow differs. It was

alarming to note that about 80% of the land irrespective of categories were left fallow for more than 5 years, and only a small fraction of 9.89% land were left fallow for less than 3 years (Table 3) indicating initial signs of deserting agricultural farming land. It is timely for the Government to come up with appropriate enabling policy measures and innovative ideas to motivate farmers and youths to continue agricultural farming.

**Table 3:** Length of agricultural land left fallow by land categories

Length of fallow land	Kamzhing	Chhuzhing	Orchard	Khimsa	Total	%
More than 10 years	1432	321	18	3	1774	56.77
5 to 10 years	424	293	6	3	726	23.23
3 to 5 years	178	135	0	3	316	10.11
1 to 3 years	132	99	5	3	239	7.65
Less than 1 year	39	29	0	2	70	2.24

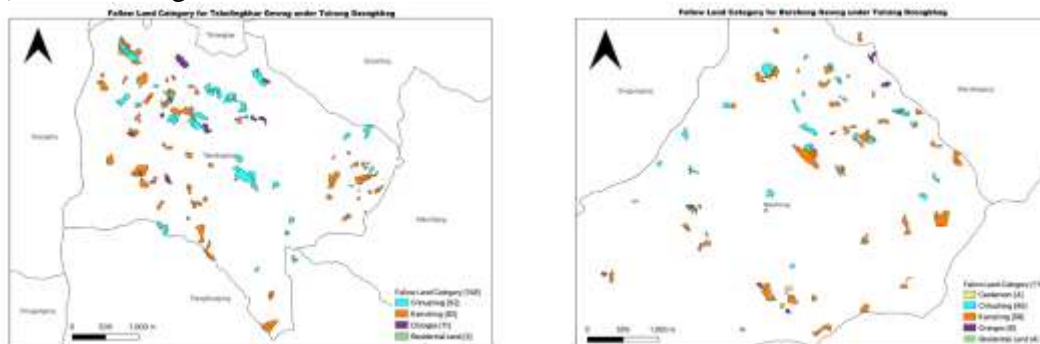
### 3.3 Spatial distribution of fallow land

Figure 3 represents the spatial distribution of fallow land by land categories for pilot survey sites. The data for 287 fallow land plots recorded in Barshong and Tsholingkhar Gewogs under Tsirang Dzongkhag were found complete. After categorization of the land types, Chhuzhing, Kamzhing, Khimsa, etc the highest number of fallow lands was recorded in Kamzhing with 140 plots followed by Chhuzhing land type with 97 plots.

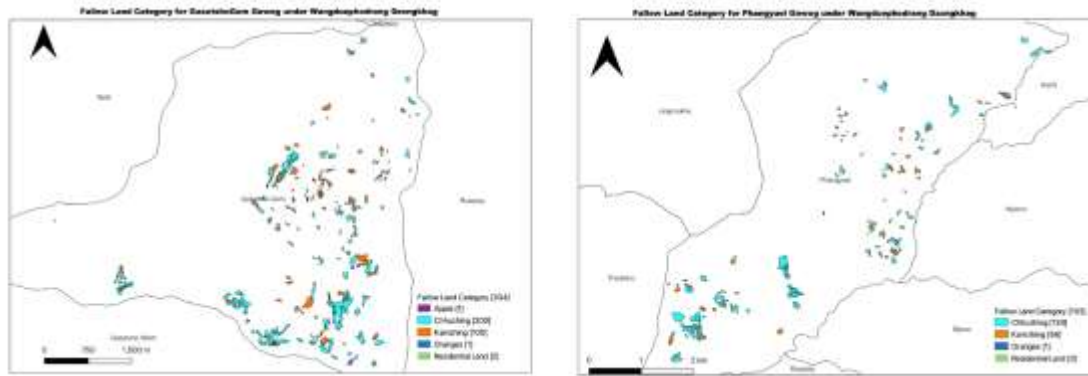
The data for 637 fallow land plots recorded in Gasetsho Gom and Phangyuel Gewogs under Wangdue Phodrang, Dzongkhag were found complete. The highest number of fallow lands are recorded in Chhuzhing with 333 Plots followed by Kamzhing land type with 156 plots.

The data collected from Langthil and Nubi Gewogs under Trongsa Dzongkhag were found complete for 2134 plots following under different land categories such as Chhuzhing, Kamzhing, Khimsa, etc. The highest number of fallow lands was recorded under Kamzhing with 1787 plots followed by Chhuzhing land type with 331 plots.

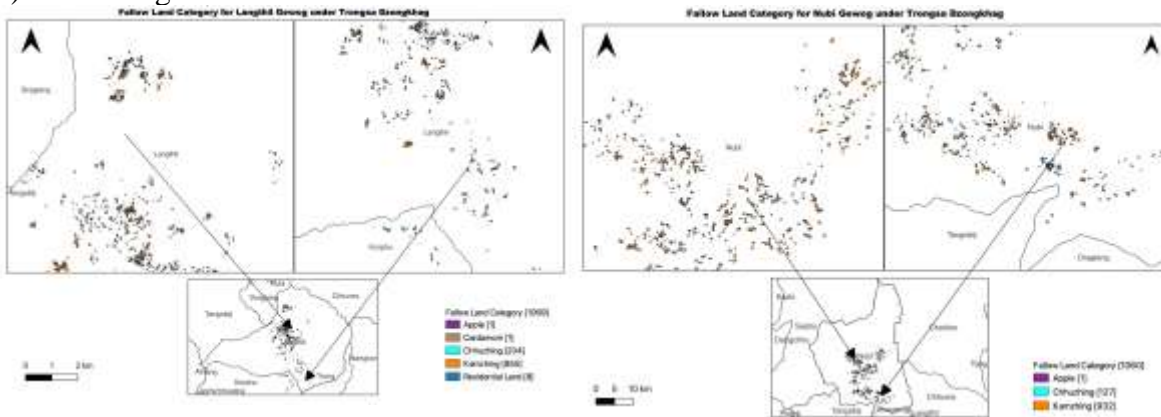
#### a) Tsirang



b) WangduePhodrang



c) Trongsa



**Figure 3:** Spatial distribution of fallow land by land categories

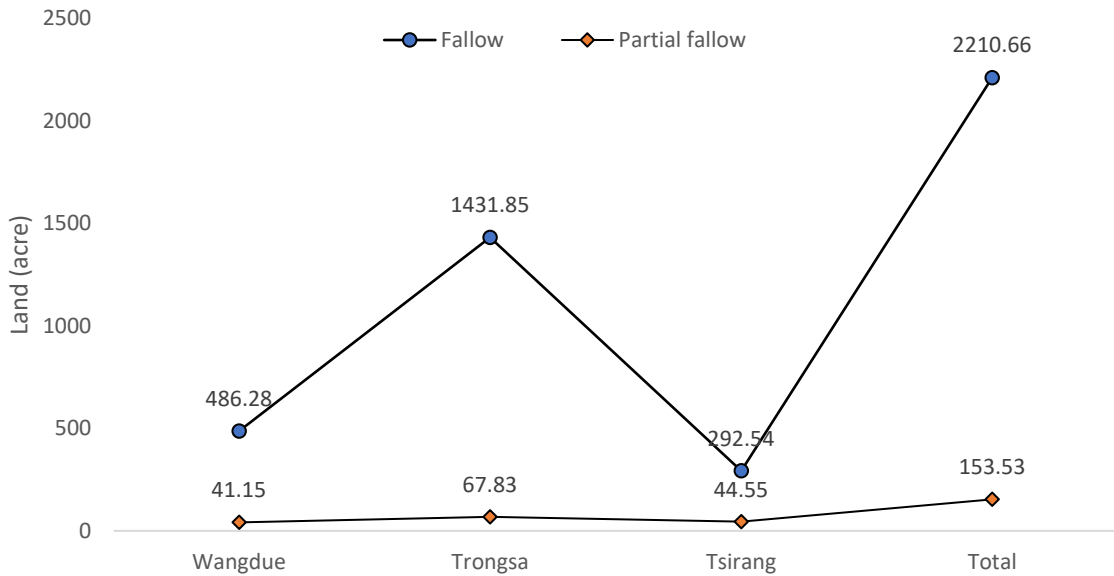
### 3.4 Reasons of leaving land fallow

Most respondents from the pilot survey sites reported household labour shortage, crop damage by wildlife, and lack of irrigation facilities as the major causes for the leaving land fallow. Lack of access to roads, location of plots far away from human settlement, difficult land topography (steep slope) and land degradation/landslide are other reasons reported in this pilot study. It is also interesting to note that growing remittance from family members living outside, better income generation from off farm works as compared to agriculture farming, and meeting household food requirements from small plots of cultivated land for a small family members contribute to leaving the land fallow. Land owned by the institutions and land fragmentation, in particular inheritance of land by public and private employees might have aggravated the situation of leaving land fallow.

### 3.5 Fallow land area and distribution

Table 4 and Figure 1 provides the details of fallow land in pilot survey sites. The survey recorded a total fallow land of 2364.20 acres with 2210.66 acres and 153.53 acres of land being left complete and partial fallow, respectively in pilot study sites.





**Figure 1:** Fallow land recorded for the survey areas by district

**Table 4:** Fallow land distribution by land categories and area (ac) for the pilot survey areas

Dzongkhag	Gewog	N	Kamshing	Chhuzhing	Orchard	Khims	Total	Avg. plot area <sup>a</sup>
Tsirang	Barshong	125	80.90	39.00	11.77	1.80	133.47	1.07 (0.1-9.82)
	Tsholingkhar	162	106.45	80.68	15.33	1.17	203.63	1.26 (0.016-9.82)
	Total	287	187.35	119.68	27.10	2.98	337.20	1.18 (0.06-9.82)
Wangdue Phodrang	Phangyul	333	65.33	257.93	0.35	1.01	324.62	0.93 (0.036-8.76)
	Gasetsho	304	51.83	148.29	2.24	0.45	202.81	0.68 (0.016-6.87)
	Gom							
	Total	637	117.16	406.22	0	0	527.43	0.81 (0.02-8.76)
Trongsa	Langthel	1069	575.80	105.54	2.59	1.45	681.84	0.62 (0.02-7.00)
	Nubi	1065	727.90	89.39	0.54	0.50	817.83	0.75 (0.016-3.72)
	Total	2134	1303.70	194.94	0.54	0	1499.68	0.69 (0.016-7.00)
Grand Total		3058	1608.20	720.84	30.23	4.93	2364.20	0.76 (0.02-9.82)

Trongsa district recorded the highest fallow land followed by Wangdue Phodrang and Tsirang districts. A total fallow land recorded was 1499.68 acres in Trongsa, 527.43 acres in Wangdue Phodrang and 337.2 acres in Tsirang district. The survey sites with exception to Wangdue Phodrang district also recorded a small area of fallow land under *Orchard* (30.23 acres) and *Khimsa* (4.93 acres) categories. In comparison to the fallow land data reported in RNR Census 2019 – it is worth noting that the survey sites in Trongsa constitute 59 % of the total fallow land under dry land (2218.35 acres) and 36% under wetland categories (541.54 acres). Survey sites at Wangdue district constitute 46 % of the fallow land under *chhuzhing* (888.17) categories reported in RNR Census 2019.

Overall, the highest fallow land amongst different land categories was recorded in *Kamzhing* (1608.20 acres), followed by *Chhuzhing* (720.84 acres), orchard (30.23 acres) and *Khimsa* (4.93 acres). Trongsa and Tsirang districts had the highest fallow land area under *Kamzhing* in contrast to *Chhuzhing* category for Wangdue Phodrang district (Table 4).

In general, the land left fallow in the pilot survey sites is considerable causing a huge opportunity cost. For instance, 2364.20 acres of land could easily support the rearing of 2364

numbers of high yielding cattle through production of about 8840 MT of dry matter for feeding. Similarly, 1608.20 acres of Kamzhing and 720.84 acres of *Chhuzhing* left fallow would have produced about 1563 MT of maize (@ 0.97 MT of maize per acre) (CIMMYT, 2008) and 1189 MT of rice (@ 1.65 MT (Pelden, 2018)/acre), respectively. This clearly indicates that fallowing cultivable land reduces overall agricultural production and may increase dependency on food import.

The overall average plot area recorded in the pilot survey sites was 0.76 acres ranging between 0.02 to 9.82 acres. Amongst the districts, Tsirang recorded the largest average fallow land plot area of 1.18 acres, followed by Wangdue Phodrang (0.81 acres) and Trongsa (0.69 acres). The survey recorded about 76.20% of the respondents holding average fallow land size of less than 3 acres, of which about 38% of the respondents owned less than one acre (Table 5). The same has also been represented on the map grouping the plot size into different ranges (Figure 4).

Of the total 287 plots in Tsirang, 107 plots in Barzhong Gewog and 117 plots in Tsholingkhon Gewog has land acreage between 0 -2 acres, which constitutes about 84 % of the fallow land in Tsirang. Only 1 plot has an acreage between 8-10 acres and 3 plots has an acreage between 6 to 8 acres which signifies more small fallow land in Tsirang and its limitation to commercial farming.

Of the 497 plots in Wangdue Phodrang, 280 plots in Gasetsho Gom and 179 plots in Phangyuel Gewogs has land acreage between 0-2 acres which constitutes about 92 % of the fallow land in Wangdue Phodrang. Wangdue Phodrang records the highest fallow land with small areas (0-2 acres).

Of the 2129 plots in Trongsa, 1012 plots in Langthil and 927 plots in Nubi Gewog has land acreage between 0-2 acres which constitute about 91 % of fallow land in Trongsa. There is no plot that holds an acreage of 8 acres and higher. Only 1 plot has an acreage between 6-8 acres while 16 plots have an acreage between 4-6 acres.

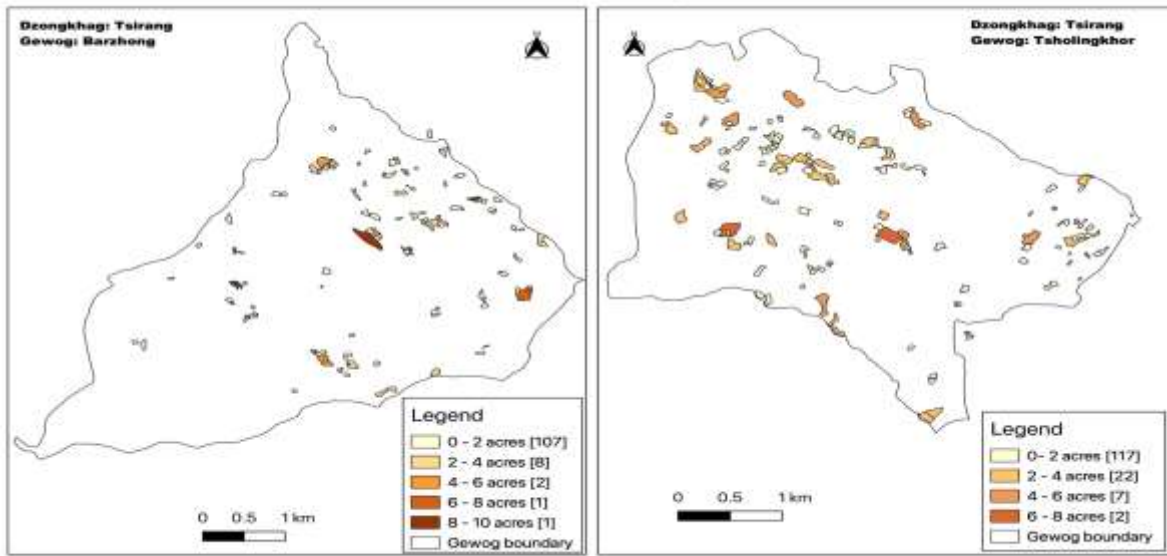
Thus, given small area and scattered distribution (Figure 2 & 3) of the fallow land plots, leasing out or venturing into commercial activities will not be feasible unless appropriate policy measures to consolidate those fallow land is initiated.

**Table 5:** Fallow land distribution by land area

Land area (acre)	Trongsa	Tsirang	Wangdue	Total	%
< 1 acre	181	92	129	402	37.82
1-1.99	148	47	68	263	24.74
2-2.99	89	20	36	145	13.64
3-3.99	54	16	12	82	7.71
> 4	118	19	34	171	16.09
Total	590	194	279	1063	100

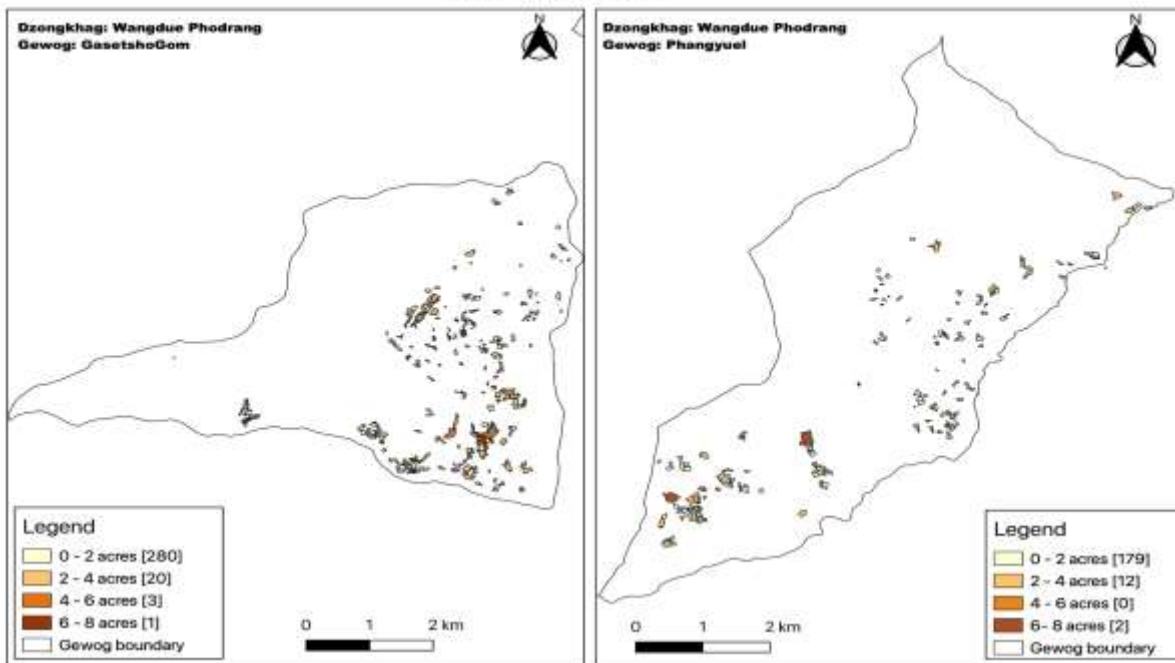
a) Tsirang

**Fallow Land Acreage**

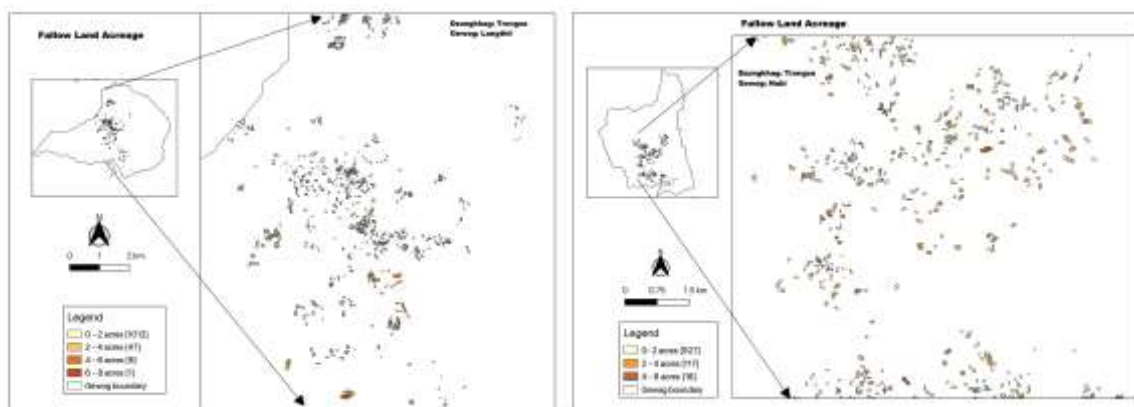


b) Wangdue Phodrang

**Fallow Land Acreage**



c) Trongsa



### 3.6 Views on leasing out fallow land

The respondents were asked whether they are interested to lease out their existing fallow land to interested individuals, as it is expected to benefit both the land owner and lessee without any land holdings. Overall, willingness of respondents to lease out 81.9 % of the fallow land plots was recorded; while the remaining 18.1 % of the plots will be reverted to agricultural farming by the landowners if basic amenities required for the agriculture farming are provided, and issues related to wildlife conflicts and labor shortages are addressed. Based on the fallow land status, close to 82.5 % (2498/3027) and 61.22 % (60/98) of plots recorded under complete and partial fallow land, respectively (Table 6), have shown interest to lease-out their land under the fallow land bank concept. While initiative to bring fallow land into productive use through fallow land bank is noble the success is challenged with lack of startup capital, skills, low educational level and poor strategic planning (Richard & Howard, 2006). Further they also reported that very small enterprises are more likely to have a high failure rate, and the chances of failure for businesses located in rural areas with a narrowly focused niche strategy are high.

**Table 6:** Response on leasing out fallow land

Land status	Response		Total
	Yes	No	
Fallow	2498	529	3027
Partial fallow	60	38	98
<b>Total</b>	<b>2558</b>	<b>567</b>	<b>3125</b>

Trongsa district had reported the highest number of plots (416) to be revived for agricultural farming by the land owners. The details of fallow plots count to be retained and willingness to lease out by the study sites are presented (Table 7).

**Table 7:** Fallow land plots count to be lease out

Dzongkhag	Gewog	Complete fallow		Partial fallow		Total	
		Yes	No	Yes	No	Yes	No
	<b>Total</b>	<b>217</b>	<b>47</b>	<b>12</b>	<b>11</b>	<b>229</b>	<b>58</b>
Tsirang	Barshong	97	18	7	3	104	21
	Tsholingkhar	120	29	5	8	125	37
	<b>Total</b>	<b>537</b>	<b>85</b>	<b>20</b>	<b>8</b>	<b>557</b>	<b>93</b>
Wangdue Phodrang	Gasetsho Gom	253	38	9	0	262	38
	Phangyul	284	47	11	8	295	55
	<b>Total</b>	<b>1744</b>	<b>397</b>	<b>28</b>	<b>19</b>	<b>1772</b>	<b>416</b>

Langthel	827	241	16	9	843	250
Nubi	917	156	12	10	929	166
<b>Grand Total</b>	<b>2498</b>	<b>529</b>	<b>60</b>	<b>38</b>	<b>2558</b>	<b>567</b>

Majority of fallow land in this pilot survey was recorded under gentle slope followed by flat, sloppy and steep slope. Irrespective of land topography, the land owners are willing to either lease out the plots or cultivate themselves (Table 8). Both pilot sites in Wangdue Phodrang and Langthel in Trongsa district had a comparatively larger area of flat land than other pilot survey sites.

**Table 8:** Respond on the willingness to lease out fallow land in relation to topography

Dzongkhag	Gewog	Gentle Slope		Sloppy		Steep slope		Flat		Total	
		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Tsirang	Barshong	46	8	42	11	5	0	11	2	104	21
	Tsholingkhar	89	26	9	6	5	0	22	5	125	37
Wangdue Phodrang	Gasetsho Gom	126	29	6	2	1	1	129	6	262	38
Trongsa	Phangyul	166	31	22	4	2	3	105	17	295	55
	Langthel	598	206	22	5	17	2	206	37	843	250
	Nubi	857	155	69	8	3	3			929	166
<b>Total</b>		<b>1882</b>	<b>455</b>	<b>170</b>	<b>36</b>	<b>33</b>	<b>9</b>	<b>473</b>	<b>67</b>	<b>2558</b>	<b>567</b>

### 3.7 Lease tenure

Respondents willing to lease out their fallow land were asked to respond on how long their land should be leased out in a three points Likert scale of 5 years, 5-10 years and more than 5 years. Irrespective of the plot ownership, land categories and topography about 50% of respondents reported that the land should be leased out for a minimum period of five years, and others preferred to lease out their land for a longer duration.

### 3.8 Grace period

Adequate time is required for any businesses to have returns on investment. Agricultural farming is dependent on multiple factors, and risks are high and based on the types of farming the returns are small and slow due to initial substantial investment. Diverse views on the grace period for the lease fee payment was recorded. About 50% of the plot owner's felt that a grace period of 3 years should be given for the interested individual to revive the fallow land and make economic gain out of it. Some respondents felt that the grace period should be less than 2 years and a small number of respondents expect to start charging lease fees from the year the land is leased-out.

Therefore, in line with a traditional practice of *pang poi losum* adopted by the locality for the land lease arrangement, and lessee requiring to make huge investment to revert the fallow land into productive use to generate income, it is felt that a minimum of three years grace period should be provided to start paying lease fee. However, there are also possibilities to shorten the grace period for agricultural farming with a short gestation period such as commercial vegetable farming and broiler production.

### **3.9 Fallow land lease fee**

Data recorded on lease fee are not properly reported and further it is not normally distributed. As such with the available data, the expected average annual fee per acre was estimated at Nu. 11,678, which is much higher than the current lease rate of Nu. 3000/ac levied for the commercial agriculture farming. The lease rate expected by the respondents from Wangdue Phodrang Dzongkhag was recorded highest with Nu. 15463/ac; whereas, respondents from Tsirang and Trongsa expected a similar lease rate of about Nu. 9800/ac. The lease rate expected for different land categories differ too. Amongst the land categories, expected lease rate was recorded highest for the *Chhuzhing* (Nu. 12076/ac), followed by *Kamzhing* (Nu. 10792/ac), *Orchard* (Nu. 7571/ac) and *Khimsa* (Nu. 4378/ac).

### **3.10 Land development and use**

Land development will be inevitable to revert the fallow land to productive agricultural use. In some cases, investment had to be made on different structures such as construction of irrigation canal, temporary structure, fencing, animal shed etc. To this, the respondent views were sought on whether development of such structure and type of farming practices will be allowed in the lease land. Most plot owners (91.68%) agreed to allow land development and modification (construction of temporary structure, irrigation canal, terracing etc.) to suit the farming practice, while about 301 (9.63%) plots owners are not in favor of such modifications. In addition, about 89% of the respondents do not have any restriction for the lessee to venture into any form of agricultural farming in the lease land, with the rest (11%) opposed against establishment of orchard (fruits tree plantation), cardamom, livestock farm for meat production particularly piggery, broiler and fishery farming.

## **4. Conclusions and recommendation**

Majority of individuals are interested to lease-out their fallow land for agricultural farming. Some landowners are interested to revive their fallow land into productive use to support their household livelihood given all required basic amenities for agriculture farming is in place. For the lands to be put into agriculture use again, government's support should ensure reliable irrigation facilities, farm mechanization, and also address human wildlife conflicts etc. The size of fallow lands is small, scattered and located far away from the human settlements, and bringing those land under commercial agricultural farming seems impossible unless appropriate policy interventions were instituted to consolidate it. Given the current dependency on food import and the adverse impact of massive fallow land on people's livelihoods, the issue of fallow land has to be addressed urgently by the Government with appropriate policy measures.

With growing population and increasing demand for food, a priority government policy intervention and investment would be necessary to revert the fallow land into productive agriculture use to contribute to the national food and nutrition security. One such promising initiative the government could undertake is to institute and strategically implement a fallow land bank program to revert the agricultural fallow land. Such timely innovation on utilization of fallow land could offer opportunities to support landless farming households and those wishing to undertake commercial farming while providing benefits to the land owners through rents. Otherwise, fallow land issue will continue to rise and will have far reaching consequences

on food and nutrition security, poverty reduction socio-economic development as Bhutan is largely an agrarian society.

Other recommendations that may be considered:

- Currently a clear definition of fallow land is lacking in Bhutanese context, and for policy interventions – “a fallow land may be defined as “any agricultural land that has ceased cultivation or left uncultivated for consecutive three years or more”.
- Agriculture farming in general is subsistence and not economically viable despite hardships as compared to other off-farm activities. Therefore, it is critical to enhance the profitability of farming by promoting agriculture as a business and by providing assured marketing support including pricing support. There should be security of farmers' investment in agriculture by making farming profitable through good prices for far products. The provision of guaranteed purchase of farmer's products at a fair price could encourage farmers to cultivate and reverse fallow land.
- One potential option to encourage landowners and other lessees to cultivate fallow land could be to promote contract farming. Such a model has already been initiated with BAIL and could be replicated and scaled out with other private companies like Karma Feed, AWP, Centenary Distillery, Darlha Flour Mill. However, this arrangement might require some policy support measures from the Government as there is a price gap between what farmers expect and what private companies can offer.
- In order to facilitate and support fallow land reversion either through commercial farming or contract farming arrangement, government institutions may have to intervene so that there is assurance for both the parties. Currently, there is no trust between the landowners and the lessee because of which there is less interest or takers of private land on lease.
- A policy institution must be in place to protect both lessee and lessor legally although a traditional system of land lease-in and lease-out practices exists since time immemorial.
- A minimum lease period of five years must be maintained, with a grace period of three years at par with the traditional practices of *pang poi losum* for the individual to derive economic benefits effective date of leasing fallow land. However, there are also activities with a short gestation period such as vegetable production, layer and broiler production which needs to be reviewed.
- A reasonable annual lease fee for fallow land must be established to ensure win-win scenario for both lessee and lessor engaged in fallow land banking program. The lease fee may be tagged based on diversity of farming activities, and different land holding types possibly. The other blanket option is to adopt the current structure of lease fee for commercial agriculture farming.
- Further, to address land fallowing, it may be suggested to: improve farmer's access to quality agriculture inputs (seeds, fertilizers, pesticides and irrigation), enhance farmer's knowledge of improved farming techniques, ensure stable and secure markets and establish agricultural infrastructures in rural areas. There should be a mechanism to compensate farmers for losses in agriculture production due to natural disasters.

- While local governments (LGs) are increasingly taking initiatives as per the authority granted by the LG Act and also in line with the Land Act of Bhutan 2007 to deter landowners from leaving their land fallow, e.g., by instituting penalties if land left fallow or no tax payment until land is cleared, etc., such initiatives are commendable, but not enough. Similar initiatives need to be rolled out to other Dzongkhags and gewogs and for this to happen, an executive order along with proper sensitization may be necessary from the relevant agency, like NLCS. Most importantly, however, the root cause of fallow land must be addressed if the issue is to be tackled properly. In other words, there should be effective and enforceable mechanisms to motivate land owners to become involved sustainably in agriculture.
- Need to explore opportunities to utilize fallow land while undertaking major national initiatives like Million Fruit Tree Plantation (MFTP). Instead of planting these trees in the currently cultivated areas where it directly competes with the cereal cultivation, potential fallow land could be used following community approach or group approach. But this might require some additional support from the government, but can be done on a cost sharing basis. Other opportunities include growing timber, cultivating medicinal plants, agro-forestry based on competitive or comparative advantage or niche market.
- Since the causes of fallow land are multi-dimensional, the issue should be addressed through a multi-sectoral or multi-stakeholder approach as it would be difficult to solve the issue successfully by one or two agencies.

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