Kingdom of Lesotho

Bureau of Statistics

NO 07:2012

LESOTHO AGRICULTURAL PRODUCTION SURVEY CROPS 2010/2011

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Mission: To coordinate the National Statistical System(NSS) and produce accurate, timely and reliable culturally relevant and internationally comparable statistical data for evidence-based planning, decision making, research, policy, program formulation and monitoring and evaluation to satisfy the needs of users and producers.

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1. Introduction

The economy of Lesotho is mostly dependent on agriculture with a small industrial sector. The type of agriculture practiced is mainly subsistence with minimal commercial farming. Agriculture is practiced across ten districts of Lesotho and covers four ecological zones; the Lowland, Foothills, Mountain and Senqu River Valley (SRV). The lowland zone is most densely populated and intensively cultivated with relatively high chance of rainfall. The foothills zone as compared to lowland is less populated with less rainfall. The mountain zone is the largest zone of the country that is characterized by very cold winter with snow. Senqu River Valley is the smallest zone which runs from the east to the west across the districts of Thaba-Tseka, Qacha's Nek, Quthing and Mohale's Hoek along the Valley of Senqu River.

Agricultural Production Survey (APS) is an annual survey, which is undertaken by Agriculture and Food Security Statistics division. APS runs from the 1st of August of the current year to 31st July of the following year. APS concentrates on the production of both livestock and crops in the rural parts of the country. This report focuses on agricultural events on crops and its production during 2010/2011 Agricultural Year.

The 2010/2011 Crops Statistics Report has covered information on area planted and harvested, production and yield for each of the following major crops: Maize, Wheat, Sorghum, Beans Peas Oats and Barley. Area failed under each crop and reasons for crop failure are also explained.

2. Sample Design

Stratified multi-stage cluster sampling design was adopted for the selection of the sample of APS for 2010/2011 Agricultural Year. Two or three enumeration areas were combined to form a Primary Sampling Unit (PSU). A total of 120 PSU's were selected at the first stage in the rural areas of the country. A Probability Proportional to Size (PPS) was used for the selection of PSU's where households were taken as a measure of size. Individual farming households constitute Secondary Sampling Units (SSU's) and systematic sampling technique was adopted for selection of SSU's. For the estimation of crop yield, ten fields for each of the main crops per PSU were selected following systematic sampling technique andhese fields constitute third stage sample units.

APS stratified farming households into:

- Households operating at least one field;
- Households raising at least one cow, sheep and or goat and improved pigs;
- Households operating both fields and livestock.

3. Method of Data Collection

Physical measurement of the fields operated by selected farming households was done. All fields owned and operated by the household either planted or fallow were measured. Field measurement was done using Global Positioning System (GPS) and wire pegs. Each enumerator was responsible for one PSU. Data on yield was collected from two sampled sub-plots of 10 square meters each from selected field.

Sub-plot was located using random numbers; the enumerators selected a random number (to locate point 1 (P1)) between 1 and the longest length of the field and the second random number (point 2 (P2)) which was between 1 and the longest width of the field. A tape measure was used by enumerators to locate the point (P1) along the length of the field, and then entered the field to locate the second point (P2) along the width of the field. Then the first sub-plot was constructed. The same procedure was repeated to construct the second sub-plot.

For yield calculation, an average weight from the two sub-plots is taken for each field. Then the PSU average yield in each zone within the district is calculated. Finally, average district yield is obtained and multiplied by area harvested to get production. The national production is the sum of all districts production.

4 Summer Crops

Summer season crops are those crops that are planted within the specified period (1st August to the 31st January of the following year). Information on summer season crop covers area planted and harvested as well as production and yield to maize, sorghum, wheat, beans and peas. It should be noted that during summer wheat is mostly grown in the mountainous areas of the country.

4.1 Area Planted

Area planted refers to area planted in hectares (ha) to pure stand crops such as Maize, Sorghum, Wheat, Beans, Peas and mixture of crops such as Maize and Beans, Maize and Sorghum, Sorghum and Beans, Beans and Peas and other crop mixtures.

Table 1 shows area planted (ha) for Summer by district and crop, 2010/2011 Agricultural Year. The estimated area planted to Maize was 146,985ha showing 3.1 percent decrease from 151,717ha of 2009/10 Agricultural Year. Area planted to Sorghum was 35,102ha showing 1.4 percent decrease from 2009/10 which was 35,614ha. Wheat on the other hand had shown an increase of 21.2 percent from 14,088ha in 2009/10 to 17,888ha in 2010/2011.

Mafeteng had the largest area planted to Maize with 25,365ha followed by Maseru with 24,133ha, but this was not the case in 2009/10 as Maseru had the largest area planted than any other district with 24,822ha. Mokhotlong recorded the largest area planted to Wheat with 11,619ha and Berea recorded the largest area planted to Sorghum with 9,863ha.

In selected households of Berea and Mafeteng the responses were zeros. That is, the selected households had no Area Planted to Wheat for 2010/2011 Agricultural Year.

Table 1: Area Planted (ha) for Summer by District and Crop, 2010/2011 Agricultural Year

District	Crop				
	Maize	**Wheat**	**Sorghum**	**Beans**	**Peas**
Botha-Bothe	6,515	70	1,162	1,099	10
Leribe	22,904	422	4,150	4,369	52
Berea	19,714	0	9,863	2,643	17
Maseru	24,133	1,623	4,475	3,192	207
Mafeteng	25,365	0	6,128	2,706	77
Mohale's Hoek	17,808	1,347	4,438	2,169	129
Quthing	4,407	1,405	1,411	1,049	99
Qacha's Nek	4,762	393	947	1,549	385
Mokhotlong	13,093	11,619	835	1,729	617
Thaba -Tseka	8,284	1,009	1,693	1,697	270
Lesotho	**146,985**	**17,888**	**35,102**	**22,201**	**1,862**

4.2 Area Fallow

Area follow refers to area ploughed and left unseeded for one or more seasons. Table 2 shows area fallow in hectares for the period 2006/07 to 2010/2011 Agricultural Years. In 2010/2011 Agricultural Year, the country experienced area fallow of 82,900ha resulting in an increase of 6.7 percent in area fallow from 77,658ha of 2009/10 Agricultural Year.

Table 2: Area fallow in Hectares for the Period 2006/07 to 2010/2011 Agricultural Years

District	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011
Botha-Bothe	3,721	4,016	1,160	1,662	1,008
Leribe	9,737	7,152	7,312	11,672	7,497
Berea	8,132	8,970	8,030	8,752	22,121
Maseru	14,043	10,439	6,359	9,110	10,606
Mafeteng	12,979	13,806	7,004	17,266	17,231
Mohale's Hoek	13,891	11,765	9,448	15,228	12,844
Quthing	2,783	3,751	3,087	5,142	2,351
Qacha's Nek	3,906	2,323	2,954	1,795	1,613
Mokhotlong	321	3,627	851	4,789	2,261
Thaba-Tseka	2,914	3,402	2,055	2,242	5,368
Lesotho	**72,427**	**69,251**	**48,260**	**77,658**	**82,900**

4.3 Area Harvested

Summer crops are harvested after reaching their maturity stage. Area Harvested can be defined as the difference between area planted and area failed for each crop.

Table 3 presents area planted and harvested (in ha) by crop for summer 2010/2011 Agricultural Year. Area planted to Maize was 146,985ha while area harvested was 109,325ha showing 25.6 percent area failed. About1.7 percent of Area planted to Wheat failed. Area planted to Sorghum was 35,102ha and area harvested was 25,670ha, meaning that 26.9 percent of Area Planted failed. Out of Area planted to Beans (22,201ha) 44.2 percent failed. Lastly, about 70.1 percent of area planted (1,862ha) to Peas was harvested (1,304ha).

Table 3: Area Planted and Harvested (in ha) by Crop for Summer 2010/2011 Agricultural Year

Crop	Area Planted	Area Harvested
Maize	146,985	109,325
Wheat	17,888	17,588
Sorghum	35,102	25,670
Beans	22,201	12,392
Peas	1,862	1,304
Total	**224,038**	**166,278**

4.4 Production

Production is defined as the overall crop-output obtained from the harvested fields, it is obtained as area harvested multiplied by yield.

Table 4 shows production (mt) for five major crops by district, 2010/2011 Agricultural Year. Maize production in 2010/2011 was 70,309mt showing a decrease of 45.2 percent from 128,213mt in 2009/10. Wheat production decreased by 5.4 percent from 20,119mt in 2009/10 to19,032mt in 2010/2011. Sorghum production had also decreased by 47.1 percent from 23,830mt in 2009/10 to 12,602mt in 2010/2011.

Leribe recorded the highest Maize production in 2010/2011 with 14,112mt while Qacha's Nek's Maize production was the lowest with 1,702mt. Mokhotlong had the highest Wheat production with 12,898mt followed by Maseru with 2,249mt. The lowest Wheat production was observed in Botha-

Bothe (12mt). Berea had the highest Sorghum production in 2010/2011 with 3,562mt while Qacha's Nek had the lowest with 278mt.

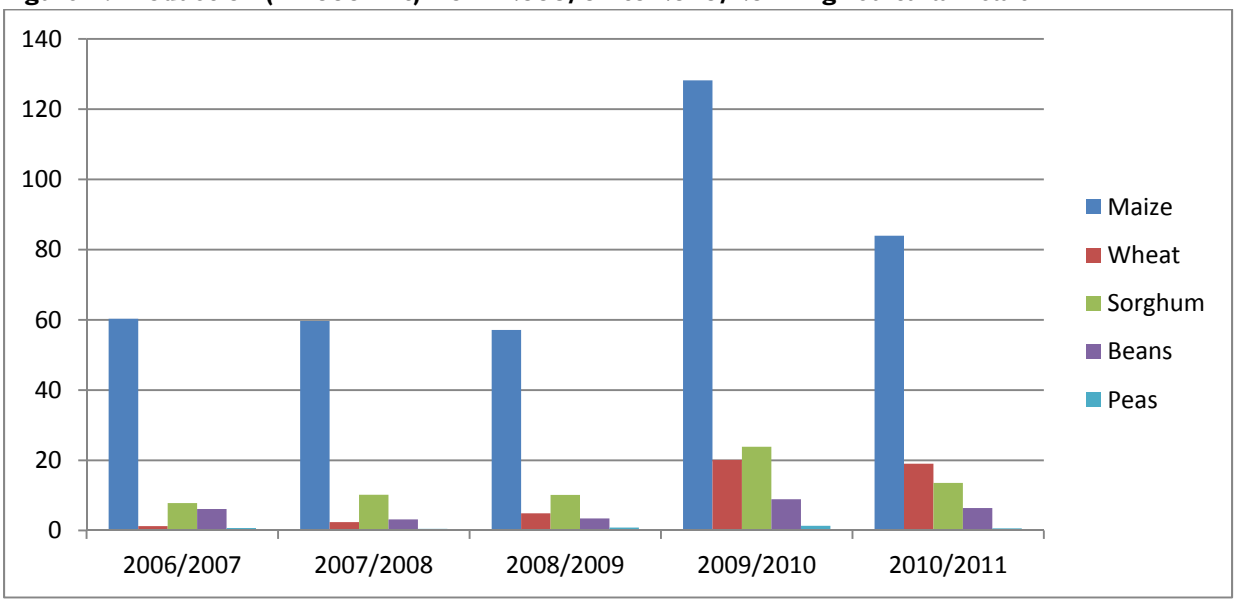
Table 4: Production (mt) for Five Major Crops by District, 2010/2011 Agricultural Year

District	Crop				
	Maize	Wheat	Sorghum	Beans	Peas
Botha- Bothe	3,997	12	289	383	1
Leribe	14,112	438	1451	802	9
Berea	6,506	0	3562	199	0
Maseru	10,145	2249	1815	328	19
Mafeteng	5,788	0	964	326	8
Mohale's Hoek	6,791	880	1243	93	52
Quthing	4,638	879	1137	147	0
Qacha's Nek	1,702	376	278	552	39
Mokhotlong	11,213	12898	702	463	476
Thaba-Tseka	5,419	1299	1159	510	51
Lesotho	**70,309**	**19032**	**12602**	**3803**	**655**

Figure 1 depicts production from 2006/07 to 2010/2011 Agricultural Years. Production in Maize has been decreasing from 2006/07 to 2008/09; this was also the case in 2010/2011 as Maize production had decreased from 128,213mt in 2009/10 to 70,309mt in 2010/2011. Maize production only increased in 2009/10 Agricultural Census.

Wheat and Sorghum production on the other hand had been increasing from 2006/07 to 2009/10; however production decreased from 20,119mt in 2009/10 to 19,032mt in 2010/2011 for Wheat and decreased from 23,830mt in 2009/10 to 12,602mt in 2010/2011 for Sorghum.

Figure 1: Production (in '000' mt) from 2006/07 to 2010/2011 Agricultural Years



4.5 Yield

Yield is production per area harvested. Table 5 shows yield (in mt/ha) by major crops and district for summer 2010/2011 Agricultural Year.

At national level, Maize yield had decreased from 0.91mt/ha in 2009/10 to 0.64mt/ha in 2010/2011 Agricultural Year. The highest Maize yield was observed in Quthing with 1.13mt/ha followed by Mokhotlong with 0.86mt/ha. The lowest Maize yield was recorded in Mafeteng with 0.37mt/ha.

In the country, Wheat yield has dropped from 1.47mt/ha in 2009/10 to 1.08mt/ha in 2010/2011 Agricultural Year. Maseru had recorded the highest Wheat yield with 1.47mt/ha followed by Leribe with 1.40mt/ha. The lowest Wheat yield was observed in Quthing with 0.63mt/ha. Berea and Mafeteng did not record Wheat yield.

Generally, Sorghum yield has decreased from 0.72mt/ha in 2009/10 to 0.49mt/ha in 2010/2011 Agricultural Year. Quthing observed the highest Sorghum yield with 0.89mt/ha while Botha-Bothe observed the lowest with 0.28mt/ha.

Beans yield on aggregate showed a slight decrease from 0.33mt/ha in 2009/10 to 0.31 in 2010/2011 Agricultural Year. Botha-Bothe recorded the highest Beans yield with 0.71mt/ha followed by Berea with 0.64mt/ha. The lowest yield for Beans was observed in Quthing with 0.15mt/ha.

Peas yield has decreased from 0.65mt/ha in 2009/10 to 0.47mt/ha in 2010/2011 Agricultural Year. The highest Peas yield was observed in Mokhotlong with 0.75mt/ha and the lowest was in Mafeteng with 0.10mt/ha. Berea and Quthing did not record Peas yield.

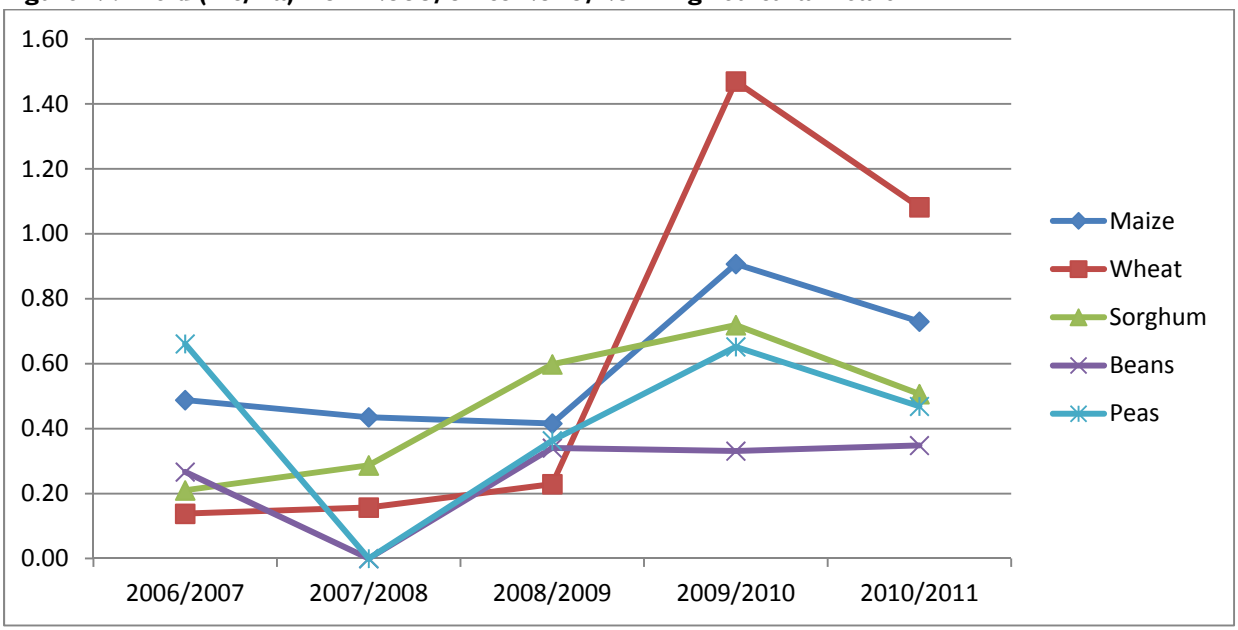
Table 5: Yield (mt/ha) by Major Crops and District for Summer 2010/2011 Agricultural Year

District	Crop				
	Maize	**Wheat**	**Sorghum**	**Beans**	**Peas**
Botha-Bothe	0.71	0.18	0.28	0.71	0.16
Leribe	0.73	1.40	0.50	0.23	0.30
Berea	0.62	0.00	0.44	0.64	0.00
Maseru	0.61	1.47	0.54	0.19	0.22
Mafeteng	0.37	0.00	0.33	0.38	0.10
Mohale's Hoek	0.52	0.67	0.40	0.18	0.48
Quthing	1.13	0.63	0.89	0.15	0.00
Qacha's Nek	0.41	1.17	0.36	0.42	0.28
Mokhotlong	0.86	1.11	0.84	0.30	0.75
Thaba-Tseka	0.74	1.29	0.80	0.46	0.32
Lesotho	**0.64**	**1.08**	**0.49**	**0.31**	**0.47**

Figure 2 shows yield (mt/ha) from 2006/07 to 2010/2011 Agricultural Years. Yield in Maize has been decreasing from 2006/07 to 2008/09. The same pattern was observed in 2010/2011 as yield in Maize decreased from 0.91mt/ha in 2009/10 to 0.73mt/ha in 2010/2011. The only period when Maize Yeild showed an increase was from 2008/09 Agricultural Year to 2009/10 Agricultural Census.

Yield Wheat and Sorghum has been increasing from 2006/07 to 2009/10; however yield decreased from 1.47mt/ha in 2009/10 to 1.08mt/ha in 2010/2011 for Wheat and decreased from 0.72mt/ha in 2009/10 to 0.51mt/ha in 2010/2011 for Sorghum.

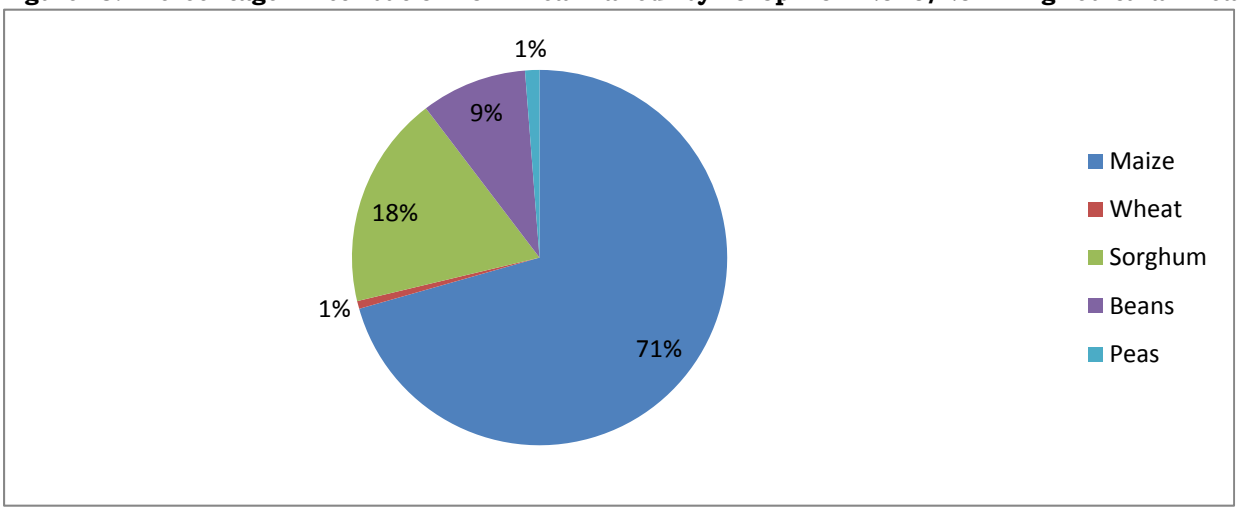
Figure 2 : Yield (mt/ha) from 2006/07 to 2010/2011 Agricultural Years



4.6 Crop Failure

Crop Failure is a situation where a crop does not reach its maturity stage. Figure 3 shows the percentage distribution of crop failure by area for 2010/2011 Agricultural Year. Maize constituted 72 percent of the total area failed while Sorghum and Beans covered 18 percent and 8 percent respectively. Wheat and Peas constituted the least crop failure with 1 percent each.

Figure 3: Percentage Distribution of Area Failed by Crop for 2010/2011 Agricultural Year



4.6.1 Causes of Crop Failure for Summer

The main reasons for crop failure are Frost, Hail, Flood, Drought, Pests, Weeds, Animals and Other. The category other comprises variable such as "Late Planting".

Table 6 shows area failed (ha) by district and cause of crop failure for Summer 2010/2011. Floods contributed the most to crop failure (24,773ha), and Berea was the district that was mostly affected by Floods with 6,781ha area failed. On the other hand, Pests contributed the least area failed (378ha). Mafeteng and Mohale's Hoek (10ha each) are the least affected districts with Pests.

Table 6: Area Failed (ha) by District and Cause of Crop Failure, Summer 2010/2011 Agricultural Year

District	Frost	Hail	Flood	Drought	Pests	Weeds	Animals	Other
Botha-Bothe	0	0	970	17	29	525	25	40
Leribe	258	144	2,716	8	14	1,129	1,012	754
Berea	294	547	6,781	54	0	3,282	390	2,495
Maseru	1,444	3	5,054	152	90	1,864	1,202	716
Mafeteng	815	165	5,930	492	10	1,252	1,783	4,421
Mohale's Hoek	29	1,071	3,270	1,842	10	337	287	1,178
Quthing	0	0	0	71	0	166	38	226
Qacha's Nek	320	0	39	29	100	924	100	105
Mokhotlong	0	0	0	0	96	45	105	71
Thaba-Tseka	577	26	12	29	29	479	168	616
Lesotho	**3,738**	**1,956**	**24,773**	**2,694**	**378**	**10,006**	**5,111**	**10,620**

5 Winter Crops

The major crops that are normally grown for winter in Lesotho are Wheat, Peas, oats and barley. However, these winter crops do not grow in the mountainous areas as such it should be noted that the mountainous districts recorded zeros as their responses for winter crop production.

5.1 Area Planted for Winter Season

Area planted refers to area planted in hectares (ha) to pure stand crops such as Wheat, Peas Oats and Barley.

Table 7 shows area planted by crops and district for winter 2010/2011 Agricultural Year. It should be noted that there are no winter crops grown in the mountainous districts namely Quthing, Qacha's Nek, Mokhotlong and Thaba-Tseka due to cold weather conditions. Peas recorded the largest area

planted with 2,972ha. This was not the case in 2009/10 Agricultural Year as Wheat had largest area planted (3,345ha). It is observed from the table that Mafeteng had recorded the largest area planted to both Wheat (790ha) and Peas (1,769ha) while Berea recorded the least area planted to both Wheat (5ha) and Peas (16ha).

Table 7: Area Planted by Crops and District for Winter 2010/2011 Agricultural Year

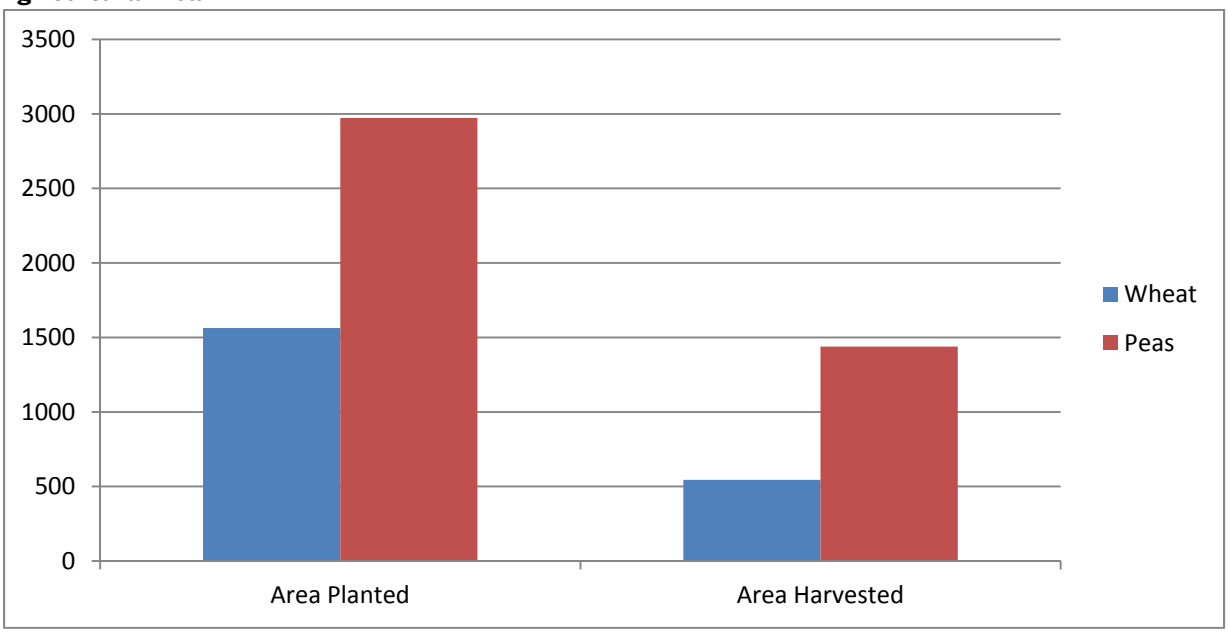
District	Crop			
	Wheat	**Peas**	**Oats**	**Barley**
Botha-Bothe	93	28	1	0
Leribe	555	162	484	0
Berea	5	16	0	0
Maseru	0	454	46	20
Mafeteng	790	1,769	602	368
Mohale's Hoek	120	543	47	0
Quthing	0	0	0	0
Qacha's Nek	0	0	0	0
Mokhotlong	0	0	0	0
Thaba-Tseka	0	0	0	0
Lesotho	**1,564**	**2,972**	**1,180**	**388**

5.2 Area Harvested for Winter Season

Winter crops are harvested after reaching their maturity stage. Area Harvested can be defined as the difference between area planted and area failed for each crop.

Figure 4 depicts area planted and harvested to Wheat and Peas for winter 2010/2011 Agricultural Year. Total area planted to Wheat was 1,564ha while total area harvested was 544ha, showing 65.0 percent area failed. Out of 2,972ha Area Planted to Peas, 49.4 percent was harvested (1,438ha).

Figure 4: Area Planted and Harvested in Hectares to Wheat and Peas for Winter 2010/2011 Agricultural Year



5.3 Winter Production

Though Oats and Barley are also winter crops, their production becomes trivial as they are in large quantities.

Table 8 illustrates Wheat and Peas production by district in 2010/2011 Agricultural Year. Wheat production had decreased in 2010/2011 compared to 2009/10; Wheat decreased from 1032mt to 109mt. On the other hand, peas had increased from302mt in 2009/10 to 343mt in 2010/2011 Agricultural Year.. Mafeteng recorded the highest production for both Wheat and Peas with 81mt and 198mt respectively. The lowest production for Wheat was recorded in Botha-Bothe (4mt) and that of Peas was recorded in Berea (1mt).

Table 8: Wheat and Peas Production by District in 2010/2011 Agricultural Year

District	Crop	
	Wheat	**Peas**
Botha-Bothe	4	3
Leribe	16	2
Berea	0	1
Maseru	0	34
Mafeteng	81	198
Mohale's Hoek	9	105
Quthing	0	0
Qacha's Nek	0	0
Mokhotlong	0	0
Thaba-Tseka	0	0
Lesotho	**109**	**343**

5.4 Winter Yield

As with winter crops production, the 2010/2011 APS had focused on Wheat and Peas only

Table 9 presents yield by crop and district for Winter 2010/2011 Agricultural Year. The highest yield of Wheat was in Mafeteng (0.27mt/ha) while the least was in Botha-Bothe (0.05mt/ha). Mohale's Hoek recorded the highest yield of peas with 0.36mt/ha while Maseru recorded the lowest yield of peas (0.08mt/ha).

Table 9: Yield (mt/ha) by Crop and District for Winter 2010/2011 Agricultural Year

District	Crop	
	Wheat	**Peas**
Botha-Bothe	0.05	0.27
Leribe	0.16	0.23
Berea	0	0
Maseru	0	0.08
Mafeteng	0.27	0.28
Mohale's Hoek	0.11	0.36
Quthing	0	0
Qacha's Nek	0	0
Mokhotlong	0	0
Thaba-Tseka	0	0
Lesotho	**0.2**	**0.24**

5.5 Crop failure for Winter season

Both Wheat and Peas had been affected mostly by drought to have not been reached their maturity.

Table 10 presents area failed by crop for 2010/2011 Agricultural Year. Mafeteng experienced the highest crop failure for both crops; Wheat and Peas with a total failure of 493ha and 1,055ha respectively. Berea as well experienced the least crop failure to both Wheat and Peas (5ha and 12ha respectively).

Table 10: Area Failed by Crop for 2010/2011 Agricultural Year

District	Crop	
	Wheat	**Peas**
Botha-Bothe	25	16
Leribe	455	151
Berea	5	12
Maseru	0	46
Mafeteng	493	1,055
Mohale's Hoek	42	254
Quthing	0	0
Qacha's Nek	0	0
Mokhotlong	0	0
Thaba-Tseka	0	0
Lesotho	**1,020**	**1,534**