Crop Situation Update

A joint assessment of 2015/16 summer crops and outlook of 2016 winter crops

Ministry of Agricultural Development

Food and Agriculture Organization

World Food Programme

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New partnerships with the CGIAR Research Programme on Climate Change, Agriculture and Food Security (CCAFS)[1] and the International Centre for Integrated Mountain Development (ICIMOD)(as part of the SERVIR Himalaya initiative)[2] have enabled the integration of crop yield forecasting (see page 14) and satellite-based earth observation data (see pages 8 and 10) in this report.

In addition, during this round, the Centre for Maize and Wheat Improvement Centre (CIMMYT) participated in the joint crop assessment missions and the International Rice Research Institute (IRRI) participated in the preparation process.

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Nepal Khadhya Surakshya Anugaman Pranali (NeKSAP)
Nepal Food Security Monitoring System

http://www.neksap.org.np

The Nepal Food Security Monitoring System (NeKSAP) collects, analyzes and presents information on household food security, emerging crises, markets and nutrition from across Nepal. Initiated by WFP in 2002, NeKSAP is now jointly operated by the Ministry of Agricultural Development and WFP under the strategic guidance of the National Planning Commission and with support from the European Union and UK aid from the UK government.

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[1] https://ccafs.cgiar.org/
[2] http://www.icimod.org/servir-himalaya

Summary

2015/16 summer crop situation

Total production of summer crops (paddy, maize, millet and buckwheat) was estimated at 6.8 million mt, a decrease of 5.63 percent compared to 2014/15 and a decrease of 5.3 percent compared to the preceding five-year average. At 6.8 million mt, the production of paddy, maize, millet and buckwheat was estimated at 4.3 million mt, 2.23 million mt, 302,398 mt and 11,641 mt respectively.

The production of paddy decreased by 9.95 percent compared to the five-year average and decreased by 10.22 percent compared to 2014/15. Despite the decrease, paddy contributed to 63 percent of the total summer crop output in 2015/16. The central region produced an estimated 1.1 million mt of paddy, which was 26.9 percent of the national aggregate and the largest of the five development regions. The top five paddy producing districts in 2015/16 were Jhapa, Morang, Rupandehi, Kailali and Bardiya.

Overall, growing conditions for 2015/16 summer crops were reported as poor. The monsoon was delayed and weak at the onset, which delayed paddy transplantation, especially in the eastern Terai. Fertilizer supply and irrigation were also constrained due to disruptions to cross-border trade with India and the shortage of fuel.

Trade and food market situation

According to the Trade and Export Promotion Centre (TEPC), the value of foreign trade during the first five months of fiscal year 2072/73 was 232.66 billion NPR, a decrease of 35.5 percent compared the same period last year (2071/72). The share of exports and imports stood at 11.2 percent (26 billion NPR) and 88.8 percent (206.66 billion NPR) respectively. During this period, the share of cereals in total imports was 4.94 percent (10.2 billion NPR), which is a decrease of 20.5 percent in value compared to 2071/72. The import of fertilizers also decreased by 21.5 percent in value, with fertilizer worth NPR 4.7 billion imported during this period.

Wholesale prices of paddy and maize increased by 3.5 percent and 1.1 percent respectively in November 2015 compared to 2 percent and 5.1 percent respectively in November 2014. The overall wholesale price index (WPI) increased by 7.9 percent in December 2015 compared to an increase of 6.6 percent over the same period last year. The WPI of pulses showed the greatest increase at 59 percent in December 2015 compared to 8.6 percent in December 2014.

In India, the first advance estimate for 2015-16 *Kharif* (monsoon) crop production was 124.05 million mt, which is 83.78 million mt higher than last year's *Kharif* crop production.

2016 winter crop outlook

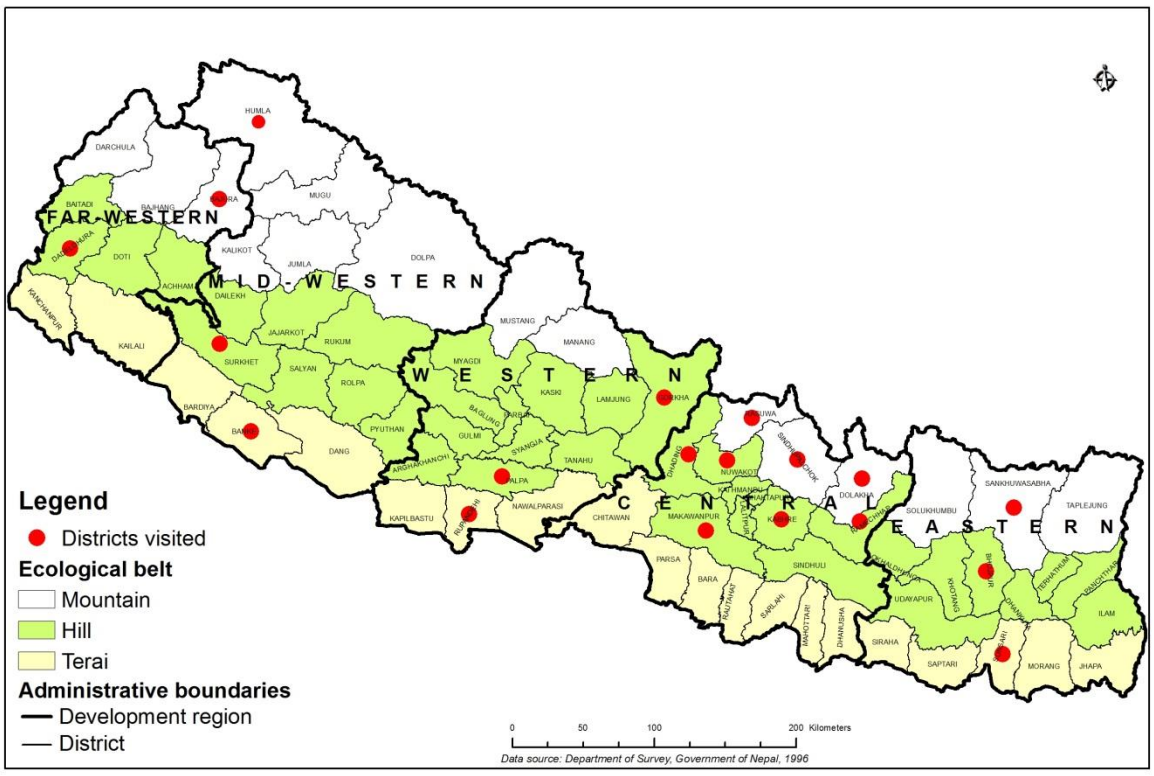
Poor winter rains during crop growth is expected to decrease wheat production. Production may decrease even further due to the poor supply of fertilizer and seeds arising from the disruptions to cross-border trade and the shortage of fuel. As a result, the Government of Nepal has projected a 30 percent wheat production decrease in 2015/16 in a recent white paper[3]. District food security networks have reported that drought conditions have affected many districts in the mid- and far-western regions since mid-2015. This is confirmed by the latest satellite-based earth observation data. NeKSAP will provide preliminary estimates of 2015/16 wheat production using CRAFT from mid-March and document the latest food security situation in the new Nepal Food Security Bulletin.

[3] http://www.mof.gov.np/uploads/document/file/White_papaer_final_20151125100100.pdf

About this report

The Crop Situation Update is published twice a year by the Ministry of Agricultural Development (MoAD), the World Food Programme (WFP), and the Food and Agriculture Organization (FAO). It provides a comprehensive overview of the domestic food supply situation with the latest statistics on the production and trade of major summer crops in 2015/16. The following primary and secondary data sources were used for this report:

- Ministry of Agricultural Development (MoAD) preliminary estimates of 2015/16 summer crop area, production and yield (see **Annex A**).
- NeKSAP District Food Security Network (DFSN) information on crop performance and the overall food security situation.
- Department of Hydrology and Meteorology (DHM) weather-related data, including rainfall, and Ministry of Commerce and Supplies Trade and Export Promotion Centre (TEPC) data on trade.
- Normalized Difference Vegetation Index (NDVI) and crop plantation area and crop growth anomalies from the International Centre for Integrated Mountain Development (ICIMOD).
- The CGIAR Research Programme on Climate Change, Agriculture and Food Security (CCAFS) Regional Agriculture Forecasting Toolbox (CRAFT) estimates of national paddy production.
- Joint crop assessment missions on 22 November – 1 December 2015 in 19 districts (see **Map 1**), including key informant interviews with District Agriculture Development Officers and other district stakeholders, community interactions with farmers, and sample crop cuts (see **Annex B and C** for a summary of findings). Mission members included representatives from MoAD, WFP, FAO, and the International Maize and Wheat Improvement Center (CIMMYT).

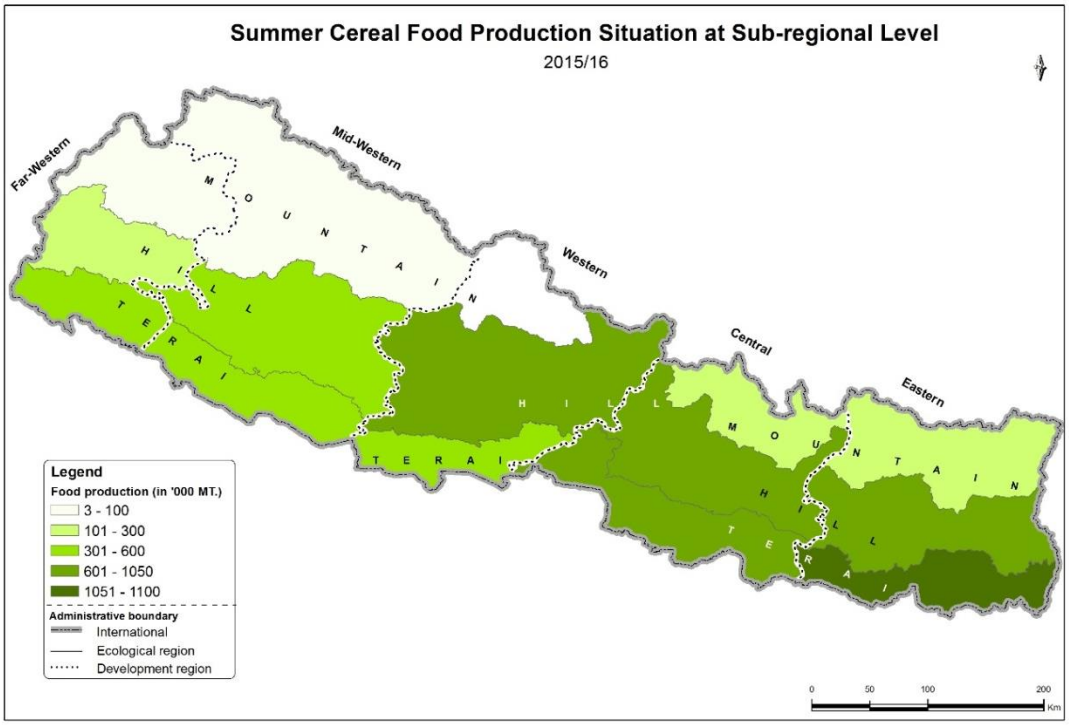


Map 1: Districts visited by joint crop assessment missions, November-December 2015

2015/16 national summer crop output

Paddy, maize, millet and buckwheat are the summer crops of Nepal, with paddy and maize being the largest. The share of paddy and maize in total summer crop production during the 2015/16 summer season was 63 percent and 33 percent respectively. MoAD estimated the total 2015/16 summer crop production at 6.8 million mt, a decrease of 5.63 percent compared to 2014/15, when it was 7.25 million mt, and a decrease of 5.3 percent compared to the preceding five-year average of 7.22 million mt. Likewise, the summer crop area was estimated to be 2.53 million ha, a decrease of 2.1 percent compared to 2014/15, when it was 2.58 million ha, and a decrease of 4.18 percent compared to the preceding five-year average of 2.64 million ha. Total 2015/16 summer crop area, production and yield by district, sub-region and region are provided in **Annex A**.

Map 2 shows the summer cereal production at the sub-regional level. The eastern Terai, central Terai and western hills were the largest summer crop producing sub-regions in 2015/16.



Map 2: Summer cereal production at sub-regional level, 2015/16 (Source: MoAD)

Where the production of summer crops decreased this year the following factors were reported:

- The late and poor monsoon rains reduced paddy planted area and delayed paddy transplanting. Total monsoon rainfall during June-September 2015, based on data from 16 synoptic stations, was 78 percent lower than the 30-year average level. Dry spells were also reported.
- Stalk rot affected maize as a result of untimely rainfall which caused hot and dry conditions in some hill districts.
- Disruptions to cross-border trade led to a fuel shortage and reduced transportation services. Since August, fuel imports from Birgunj decreased by two thirds, while fuel imports from other custom points met less than 10 percent of demand. The value of imports of chemical fertilizers in the first five months of the FY 2072/73 also decreased by 21.5 percent compared to the same period last year. Furthermore, the shortage of fuel affected ground water irrigation systems.

Paddy

Paddy is the most important crop in Nepal in terms of both planted area and production. It is chiefly grown under wet conditions in the monsoon season, while in some areas it is also grown during the spring season. MoAD estimated paddy production at 4.29 million mt in 2015/16 with an area of 1.3 million ha. **Figure 1** shows paddy production in the last six years.

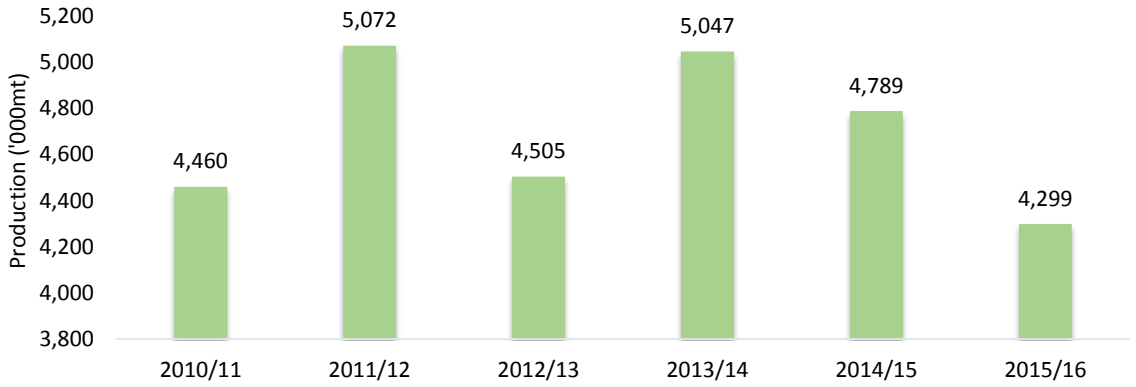


Figure 1: Production of paddy, 2010/11 to 2015/16 (Source: MoAD)

The paddy planted area decreased by 7.42 percent compared to the five-year average (referred to as the normal level) and decreased 4.38 percent compared to 2014/15. Paddy production decreased by 9.95 percent compared to the five-year average and decreased by 10.22 percent compared to 2014/15. Almost 55,000 ha of paddy land was affected by the 2015 earthquakes and the dry spell in the monsoon period. The dry spell, late and poor monsoon (see below), limited supply of chemical fertilizers and the shortage of fuel which reduced ground water irrigation were factors behind the drop in paddy production. **Figure 2** shows the in-season paddy transplantation status in July-August 2015. At the national level, 67.6 percent of paddy area was transplanted by 27 July, while in the Terai, the paddy producing belt, paddy transplantation was 63.9 percent of the five-year average.

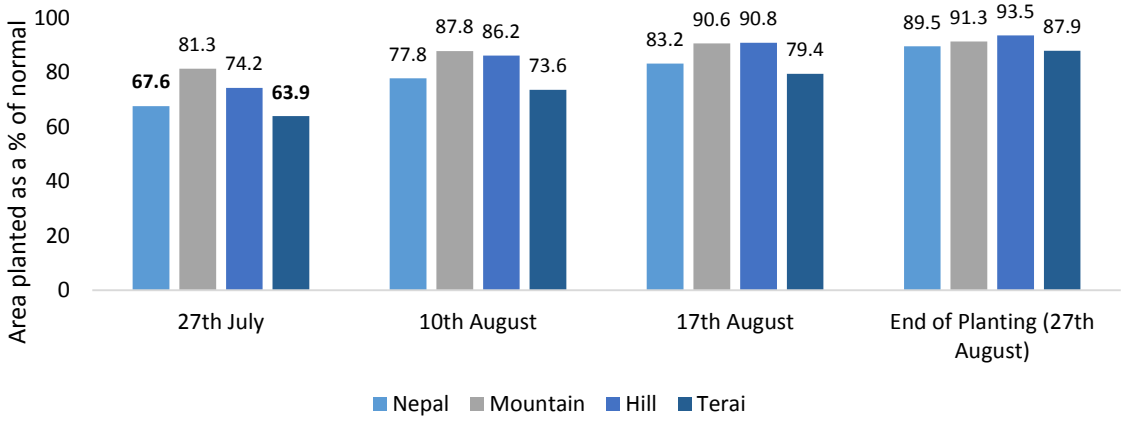
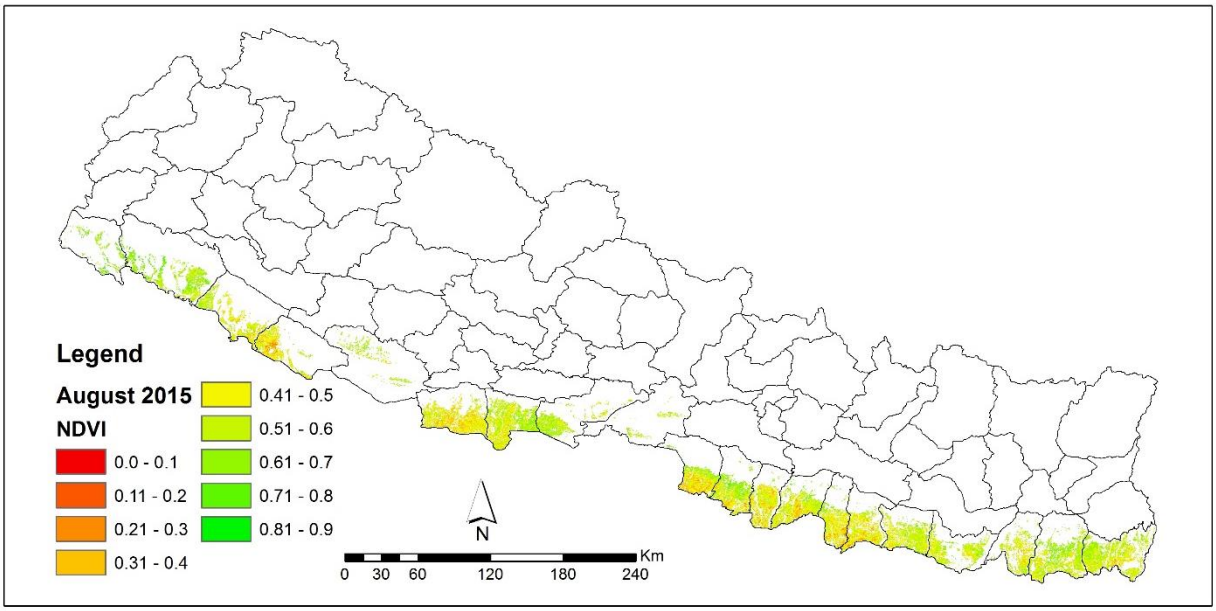


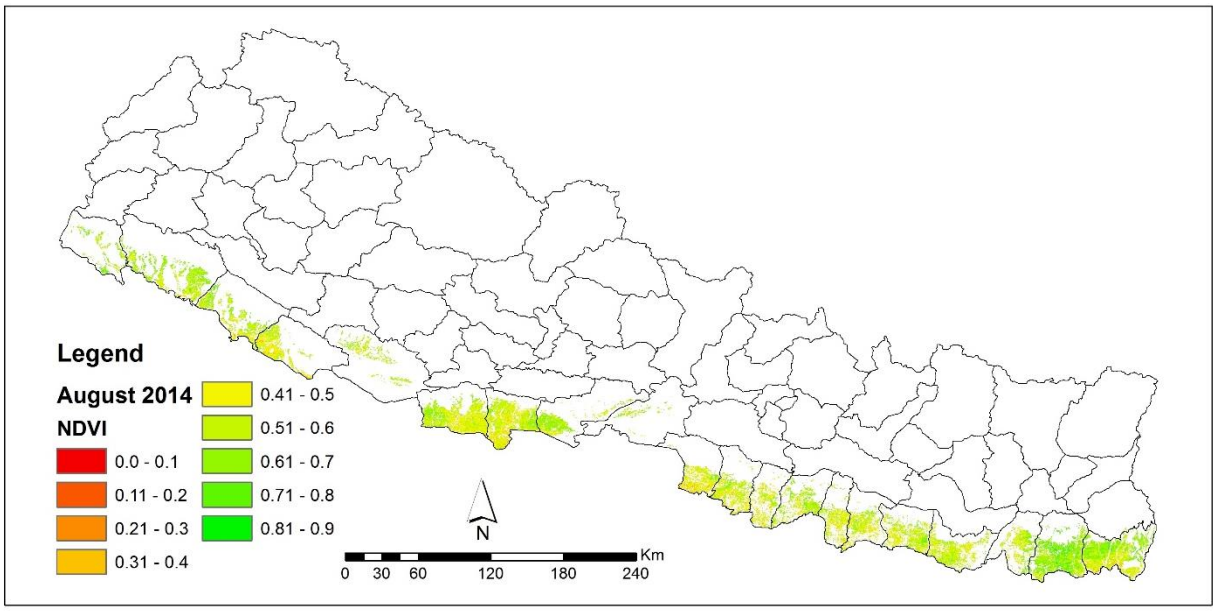
Figure 2: Paddy transplantation status (as a percent of the normal level) in July-August 2015 (Source: MoAD)

The central region produced the largest amount of paddy (1,157,961 mt), followed by the eastern region (1,154,597 mt), western region (930,402 mt), mid-western region (549,662 mt) and far-western region (506,457 mt). The top five paddy producing districts were Jhapa, Morang, Rupandehi, Kailali and Bardiya, with their respective production levels at 315,175 mt, 275,925 mt, 275,880 mt, 233,250 mt and 173,500 mt.

Map 3 shows the paddy crop planted area during the summer of 2015 and the Normalized Difference Vegetation Index (NDVI) values, based on ICIMOD analysis of MODIS satellite products, which reflect the vegetation vigor within the cropped areas. As a reference, **Map 4** shows the same during last year, i.e., the summer of 2014. Image-based analysis of the paddy crop planted area does not show a major difference between the two years; however, during this year, the crop vigor (greenness), based on the NDVI values, is substantially weaker in comparison to conditions during the summer of 2014.



Map 3: Paddy crop planted area and NDVI values during the summer of 2015 (ICIMOD)



Map 4: Paddy crop planted area and NDVI values during the summer of 2014 (ICIMOD)

Maize

Maize is an integral crop of the hill farming system and is the second most important crop of Nepal. In recent years, maize is being increasingly used for poultry and cattle feed and hence its demand is increasing with the growing poultry industry in the country. In 2015/16, MoAD estimated total maize production at 2.23 million mt from 891,583 ha of land. The maize planted area increased by 0.44 percent compared to the five-year average and increased 1.04 percent compared to 2014/15. Maize production increased by 4.53 percent compared to the five-year average and increased by 4.02 percent compared to 2014/15. **Figure 3** shows maize production in the last six years.

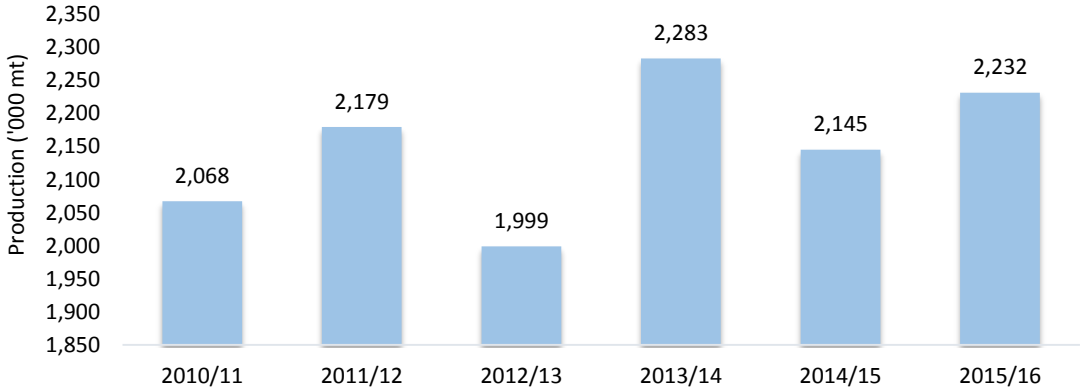


Figure 3: Production of maize, 2010/11 to 2015/16 (Source: MoAD)

Though maize production increased at the national level, some hill districts had local production drops because of a dry spell, stalk rot, army worm infestation and the 2015 earthquakes. Districts that had a maize production drop of more than 10 percent (compared to 2014/15) included the following: Taplejung, Tehrathum, Sindhupalchowk, Ramechhap, Gorkha, Lamjung, Parbat, Nawalparasi, Mugu, Humla, Jumla, Kalikot, Dailekh, Surkhet and Baitadi. In the districts of the central mountains (Dolakha, Sindhupalchowk and Rasuwa), maize planted area and production decreased by 19.70 and 18.02 percent respectively.

The eastern region produced the largest amount of maize (674,953 mt), followed by the central region (639,751 mt), western region (537,857 mt), mid-western region (294,653 mt) and far-western region (84,303 mt). The top five maize producing districts were Ilam, Jhapa, Bhojpur, Syangja and Khotang, with their respective production levels at 111,091 mt, 95,000 mt, 83,735 mt, 81,562 mt and 75,585 mt.

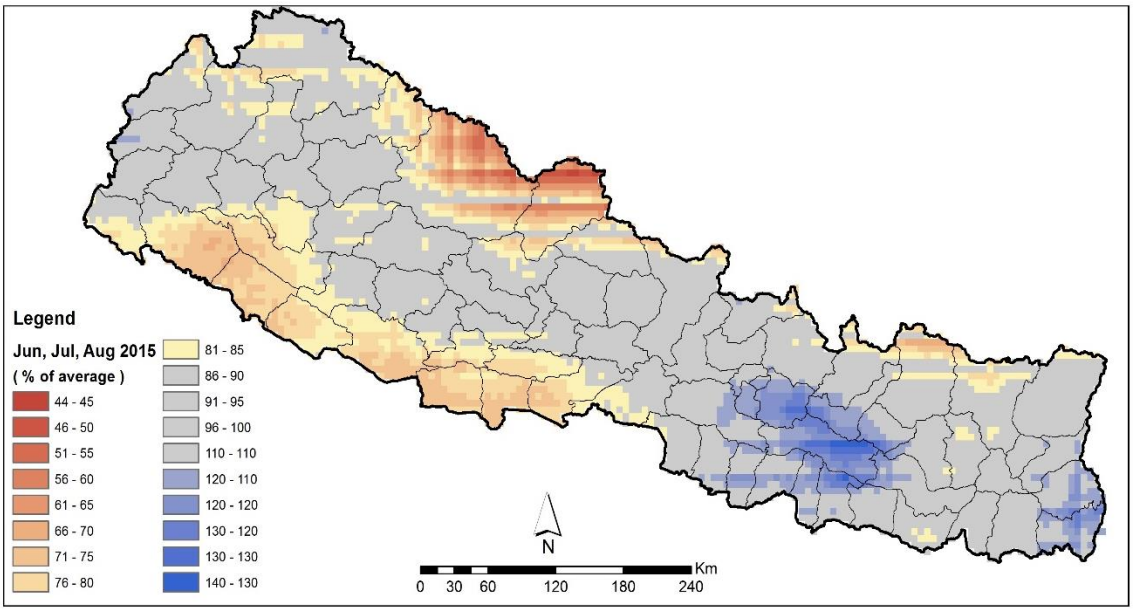
Millet and buckwheat

Millet and buckwheat are marginal crops in Nepal. In 2015/16, MoAD estimated the planted area for millet at 266,799 ha and a production level of 302,398 mt, a decrease of 1.97 percent compared to the 2014/15 season, when it was 308,488 mt. Buckwheat is grown as a main crop in some mountain districts, such as Humla, Mugu, Dolpa, Mustang, and Manang. According to MoAD, buckwheat was grown in 10,842 ha in 52 districts and the total production was estimated at 11,641 mt.

Growing conditions for 2015/16 summer crops

Rainfall

The start of the 2015 monsoon was three days late compared to the expected date of 10 June. Although the withdrawal of the monsoon was also late (3 October) compared to the expected date (23 September), the overall monsoon in 2015 was weak. **Map 5** presents rainfall during June-August based on analysis done by ICIMOD using CHIRPS V 2.0. Rainfall during the paddy growing season was below the 30-year average (or normal level) across the country. Rainfall was even lower in the Terai of the far-western, mid-western and western regions and in the mountains of the far-western, mid-western and eastern regions. The 2015 monsoon was only above normal in some central hill districts. Analysis of daily rainfall data from the Department of Hydrology and Meteorology's 16 synoptic stations (see **Figure 4**) shows the 2015 monsoon at 78 percent of the 30-year average[4].



Map 5: Rainfall (as a percent of the normal level) during June–August 2015 (Source: ICIMOD)

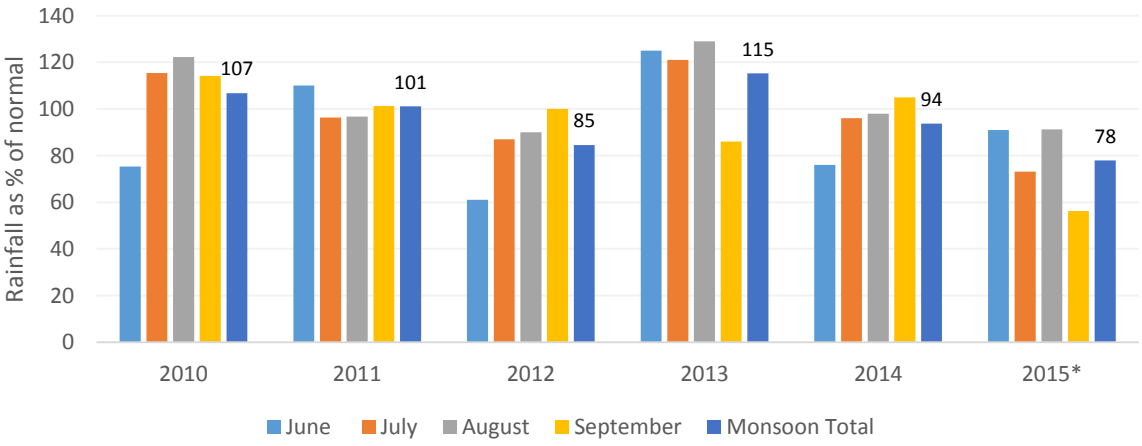


Figure 4: Rainfall (as a percent of the normal level), June–September 2010-2015 (Source: DHM)

[4] Department of Hydrology and Meteorology http://www.dhm.gov.np/contents/resources

Supply of inputs

Use of inputs is important to increasing crop production levels in Nepal. Machinery, irrigation, fertilizers and seeds are the major inputs being used. However, no exact data on mechanization is yet available in the country. The trend towards mechanization has progressively increased, as use of tractors, sowing machines, combines, power tillers, harvesters and reapers has increased.

According to MoAD, 50.4 percent of total cultivable land (2,641,000 ha) is under irrigation. The rest of the land is mainly rainfed, with summer crops almost entirely dependent upon monsoon rain.

Use of improved and recommended seed varieties is increasing in Nepal. **Figure 5** shows the supply of improved paddy seeds by the National Seed Company (NSC) in the past six years. NSC supplied 3,328 mt of paddy seed this year, an increase of 87 percent compared to last year. Although the supply of seeds through formal channels is increasing, it is not sufficient, and a large proportion of seed requirements is met through informal exchange and local seed multiplication programmes.

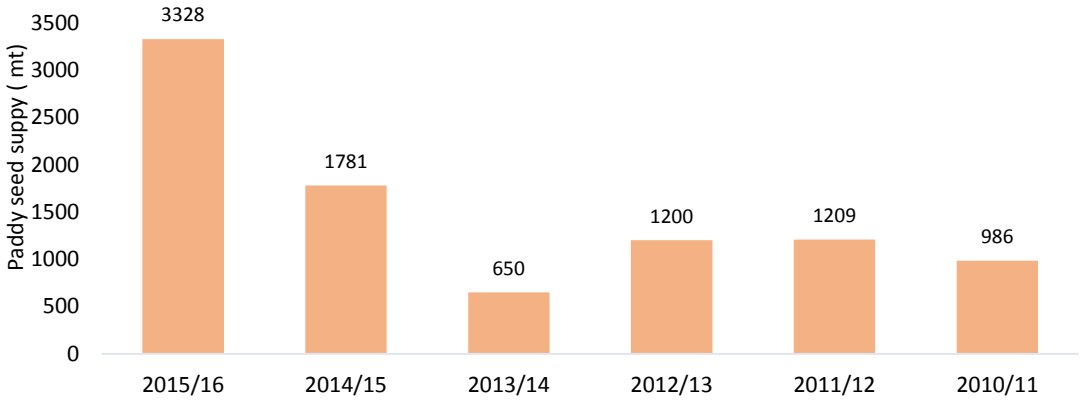


Figure 5: Supply of improved paddy seeds by the National Seed Company (Source: MoAD)

Figure 6 shows the supply of chemical fertilizers by Agricultural Inputs Corporation Limited (AICL) and Salt Trading Limited in the past five years. Together, they supplied nearly 300,000 mt of chemical fertilizer this year, although access to and distribution of fertilizers was hindered by disruptions to cross-border trade with India, the shortage of fuel and the reduction in transportation services. According to MoAD, there was a significant increase this year in per hectare fertilizer input compared to last year's record of 75 kg/ha. However, the 2004/05 Agriculture Sector Performance Review indicates that two-thirds of the fertilizer being used is from unaccounted sources.

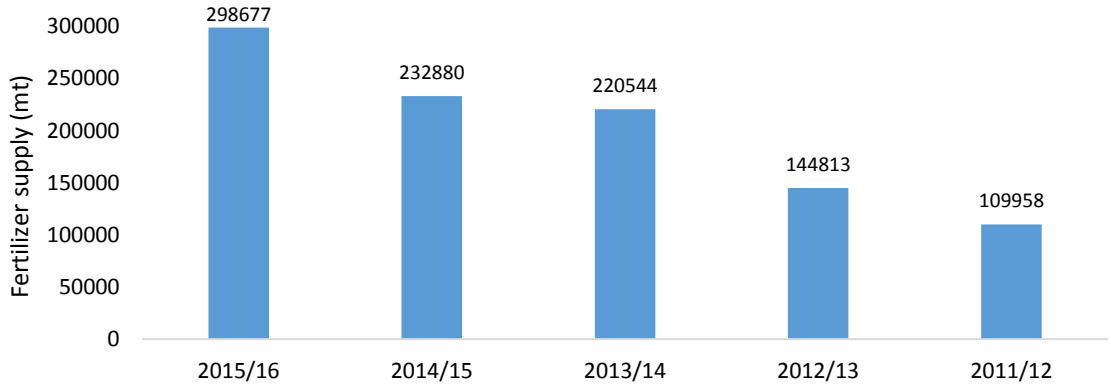


Figure 6: Supply of chemical fertilizers by AICL and STL (Source: MoAD)

Food market situation

Figure 7 shows the trend of wholesale prices of major summer crops (paddy and maize) in November 2012-2015. Wholesale prices of paddy and maize showed a marginal increase year-on-year in November 2015 at 3.5 percent and 1.1 percent respectively.

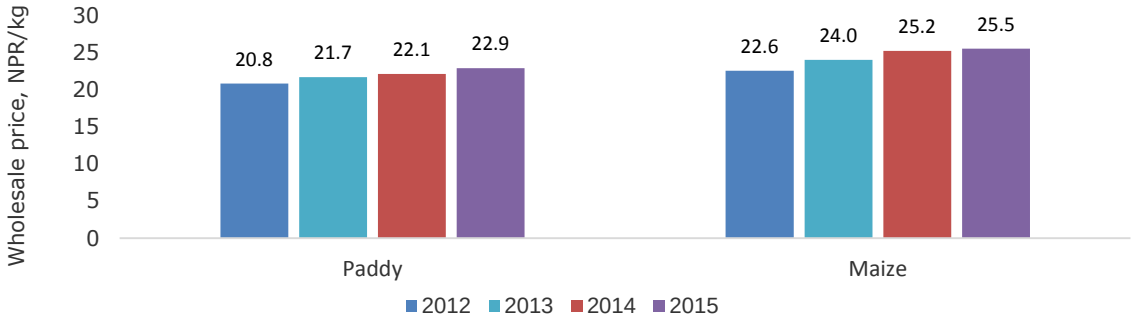


Figure 7: Wholesale prices of paddy and maize, November 2012-2015 (Source: ABPSD/MoAD)

Figure 8 presents the year-on-year wholesale price index (WPI) in December 2013-2015. In December 2015, the overall WPI increased by 7.9 percent, the WPI of agricultural commodities increased by 13.4 percent, and the WPI of food grains increased by 7.9 percent. The WPI of pulses showed the greatest increase at 59 percent in December 2015, largely as a result of poor production this year and irregular supply to Nepal due to disruptions to cross-border trade with India.

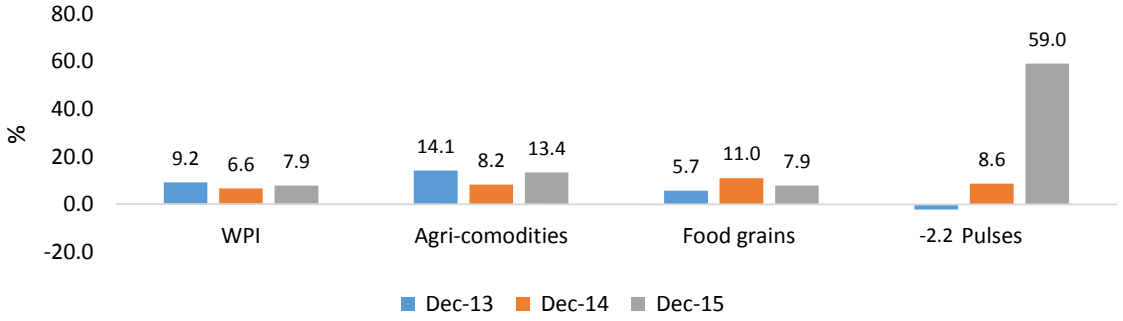


Figure 8: Wholesale price index (WPI) for December 2013-2015 (Source: Nepal Rastra Bank)

Figure 9 presents the year-on-year wage rate index (WRI) in December 2013-2015. In December 2015, the overall WRI increased by 7.7 percent and the WRI of agricultural labour increased by 9 percent. There was no difference in WRI of agricultural labour for male and female labours.

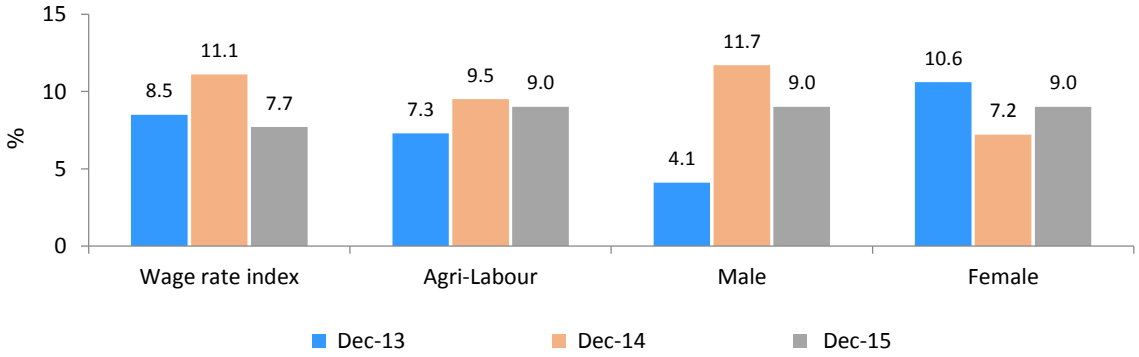


Figure 9: Wage rate index (WRI) for December 2013-2015 (Source: Nepal Rastra Bank)

Global and regional production overview

FAO forecasted world cereal production at 2,527.9 million mt, 33.9 million mt (1.3 percent) below the 2014 record. Total production of wheat, coarse grain and rice (milled) was estimated at 734.5 million mt, 1,302 million mt and 491.4 million mt respectively. FAO states "*In spite of a reduced forecast, world cereal production in 2015 is expected to be almost sufficient to cover global utilization, requiring only a small drawdown from the large existing reserves*"[5].

According to the first advance estimate of major *Kharif* (monsoon) food grain production during 2015-16 in India[6] (as of 16 September 2015), total production is estimated at 124.05 million mt, which is 3.78 million mt higher than the 2014/15 season (when it was 120.27 million mt). Despite cumulative rainfall during the 2015 monsoon season being 15 percent less than the 30-year average, and 12 percent less than last year (2014-15), the estimated production of most crops is higher than the first advance estimates for 2014/15 as a result of the timely onset of monsoon and the Indian Government's contingency plans, advisories and monitoring of seed and fertilizer availability. This season the production of *Kharif* rice is estimated at 90.61 million mt, which is 2.59 million mt higher than the first advance estimate for 2014/15 and 0.98 million mt higher than the five-year average.

2072/73 cereal trade overview

According to the Trade and Export Promotion Centre (TEPC), the value of foreign trade during the first five months of FY 2072/73 was 232.666 billion NPR, a decrease of 35.5 percent compared the same period last year (2071/72). The share of exports and imports was 11.2 percent (26.00 billion NPR) and 88.8 percent (206.66 billion NPR) respectively. During this period, the share of cereals in total imports was 4.94 percent (10.2 billion NPR), a decrease of 20.5 percent in value compared to 2071/72. During this period, fertilizer worth 4.7 billion NPR was imported, which is a decrease of 21.5 percent compared to the same period last year. **Table 1** shows the import value and volume of selected agricultural commodities during July-November 2014 and 2015.

Commodity	July-November 2014		July-November 2015	
	Volume (mt)	Value (million NPR)	Volume (mt)	Value (million NPR)
Rice	223,701	8,092	119,640	4,492
Wheat	54,630	1,318	46,644	1,170
Maize	121,600	3,308	53,766	1,380
Buckwheat	446	12	270	7
Millet	7,093	183	3,567	92
Lentils	11,870	769	10,116	1,043

Table 1: Import value and volume of agricultural commodities during July-Nov 2014 and 2015 (Source: TEPC)

Cardamom, tea, lentils and ginger are the major agricultural commodities exported from Nepal. During the first five months of FY 2072/73, the value of cardamom exports increased to 1.97 billion NPR, a 98 percent increase compared to the same period in 2071/72, and the value of ginger exports increased to 198 million NPR, a 12.7 percent increase compared to the same period last year. The export of lentils and tea, however, decreased by 64.3 percent and 0.8 percent respectively compared to the same period last year.

[5] http://www.fao.org/worldfoodsituation/csdb/en/
[6] Press Information Bureau, Government of India, http://pib.nic.in/newsite/PrintRelease.aspx?relid=126964

Validation of CRAFT 2015 paddy crop outlook

Figure 10 shows simulated production, actual production and 2015 forecasted paddy production using the CGIAR Research Programme on Climate Change, Agriculture and Food Security (CCAFS) Regional Agriculture Forecasting Toolbox (CRAFT). CRAFT forecasted paddy production for the 2015 summer season at 4,181,298 mt, which is a 12.3 percent reduction in production compared to last season. The forecasted yield is close to the MoAD estimate of 4,299,078 mt, with a prediction error of 2.7 percent. The results demonstrate the potential for crop yield modeling to be incorporated in the crop yield estimation process, which can contribute to food security planning and early warning.

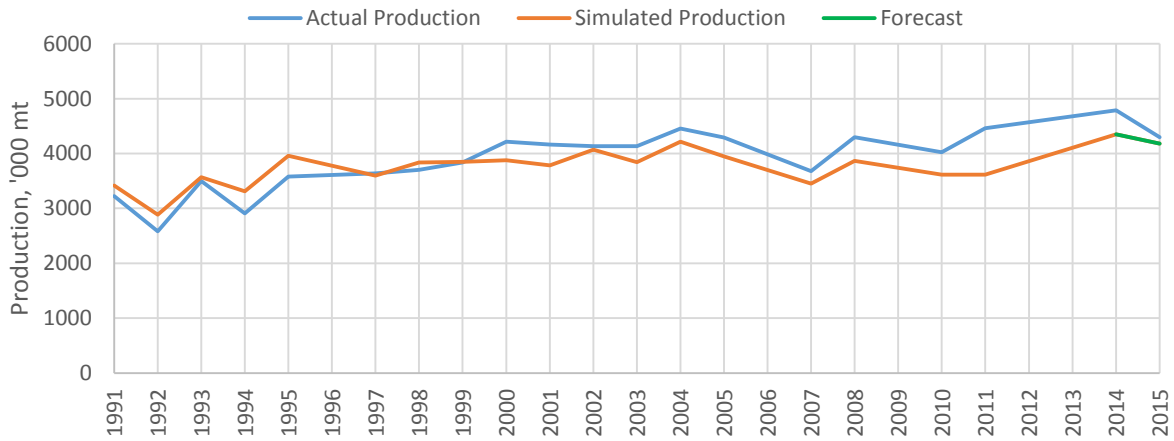


Figure 10: Observed, simulated and forecasted paddy production (Source: CRAFT)

Conclusion and winter crop outlook

Production of summer crops (paddy, maize, millet and buckwheat) was estimated at 6.8 million mt, a decrease of 5.63 percent compared to 2014/15 and a decrease of 5.3 percent compared to the preceding five-year average. With a total of 6.8 million mt, production of paddy, maize, millet and buckwheat was estimated at 4.3 million mt, 2.23 million mt, 302,398 mt and 11,641 mt respectively. The central region produced an estimated 1.1 million mt of paddy, which was 26.9 percent of the national aggregate and the largest of the five development regions. The top five paddy producing districts were Jhapa, Morang, Rupandehi, Kailali and Bardiya.

Growing conditions for 2015/16 summer crop production were reported as poor, with a delayed and weak monsoon and reduced availability and use of fertilizers and ground water irrigation as a result of disruptions to cross-border trade with India and severe shortage of fuel.

Wheat and barley are the major winter crops of Nepal. Wheat is sown in October/November and harvested in March/April in the Terai and in May/June in the hills and mountains. Because of the prolonged withdrawal of the 2015 monsoon, soil moisture during the wheat sowing and germination period was reported as adequate. However, poor winter rainfall may affect crop growth. District food security networks have reported that drought conditions have affected many districts in the mid- and far-western regions since mid-2015. This is confirmed by the latest satellite-based earth observation data. Furthermore, The Government of Nepal's recent white paper on current economic conditions stated that the poor supply of fertilizer due to disruptions to cross-border trade with India may reduce wheat production by up to 30 percent. With this in mind, NeKSAP will provide preliminary estimates of 2015/16 wheat production using CRAFT from mid-March onwards.

Annex A: 2015/16 summer crop area, production and yield by district, sub-region and region

District	Paddy			Maize			Millet			Buckwheat			Total
	Area (ha)	Production (mt)	Yield (kg/ha)	Area (ha)	Production (mt)	Yield (kg/ha)	Area (ha)	Production (mt)	Yield (kg/ha)	Area (ha)	Production (mt)	Yield (kg/ha)	
Taplejung	4075	8680	2130	9150	27450	3000	3050	4118	1350	118	165	1398	40413
Sankhuwashava	13655	29650	2171	12070	20105	1666	7171	7315	1020	15	16	1067	57086
Solukhumbu	1525	3575	2344	12950	29499	2278	2100	2625	1250	170	150	882	35849
E. Mountain	19255	41905	2176	34170	77054	2255	12321	14058	1141	303	331	1092	133348
Panchthar	9250	21184	2290	18513	38435	2076	4815	9004	1870	-	-	-	68623
Illam	12500	31750	2540	31395	111091	3538	1700	2100	1235	25	25	1000	144966
Terhathum	7610	17300	2273	12350	27170	2200	2702	3242	1200	35	35	1000	47747
Dhankuta	7664	22090	2882	7000	19000	2714	7800	8574	1099	5	4	0	49668
Bhojpur	16093	36970	2297	36360	83735	2303	5505	6250	1135	35	35	1000	126990
Khotang	12150	19400	1597	41060	75585	1841	21315	22755	1068	650	650	1000	118390
Okhaldhunga	4350	9580	2202	12400	29760	2400	7751	10177	1313	105	110	1048	49627
Udayapur	11500	40958	3562	10388	35123	3381	2760	3500	1268	19	17	895	79598
E. Hills	81117	199232	2456	169466	419899	2478	54348	65602	1207	874	876	1002	685609
Jhapa	83000	315175	3797	35500	95000	2676	1785	2142	1200	1600	1500	938	413817
Morang	78000	275925	3538	14000	46000	3286	1348	1617	1200	70	70	1000	323612
Sunsari	44900	155110	3455	8350	25100	3006	680	714	1050	400	400	1000	181324
Saptari	31900	82250	2578	2500	6500	2600	200	260	1300	-	-	-	89010
Siraha	33500	85000	2537	1700	5400	3176	640	640	1000	-	-	-	91040
E. Terai	271300	913460	3367	62050	178000	2869	4653	5373	1155	2070	1970	952	1098803
Eastern region	371672	1154597	3106	265686	674953	2540	71322	85033	1192	3247	3177	978	1917760
Dolakha	3090	6500	2104	5500	12650	2300	3600	4250	1181	400	410	1025	23810
Sindhupalchok	8750	20125	2300	18590	40890	2200	18545	20390	1099	-	-	-	81405
Rasuwa	1050	2520	2400	2430	3850	1584	895	902	1008	-	-	-	7272
C. Mountain	12890	29145	2261	26520	57390	2164	23040	25542	1109	400	410	1025	112487
Ramechap	9020	21654	2401	19345	48462	2505	5060	5100	1008	19	19	1000	75235
Sindhuli	13265	35900	2706	23620	58500	2477	11800	12000	1017	535	270	505	106670
Kavre	11308	33975	3005	25354	60849	2400	3515	4042	1150	608	666	1095	99532
Bhaktapur	4250	24400	5741	1855	7605	4100	110	156	1418	-	-	-	32161
Lalitpur	4650	21166	4552	8589	27485	3200	560	575	1027	54	53	981	49279
Kathmandu	7905	40200	5085	9923	33650	3391	852	860	1009	5	5	1000	74715
Nuwakot	15695	62627	3990	20450	63800	3120	5200	6000	1154	200	245	1225	132672
Dhading	11545	41369	3583	19445	37538	1930	6930	7095	1024	-	-	-	86002

District	Paddy			Maize			Millet			Buckwheat			Total
	Area (ha)	Production (mt)	Yield (kg/ha)	Area (ha)	Production (mt)	Yield (kg/ha)	Area (ha)	Production (mt)	Yield (kg/ha)	Area (ha)	Production (mt)	Yield (kg/ha)	
Makwanpur	11130	35500	3190	23652	70956	3000	2645	3306	1250	185	205	1108	109967
C. Hills	88768	316791	3569	152233	408845	2686	36672	39134	1067	1606	1463	911	766233
Dhanusha	35200	121100	3440	2465	7800	3164	300	300	1000	-	-	-	129200
Mahottari	25400	83500	3287	9200	26700	2902	-	-	-	-	-	-	110200
Sarlahi	42540	117500	2762	11140	48954	4394	950	968	1019				167422
Rautahat	30400	101100	3326	2055	6800	3309	62	63	1016				107963
Bara	55400	143900	2597	13400	42800	3194	79	103	1304				186803
Parsa	40500	152000	3753	4075	14262	3500	85	90	1059				166352
Chitwan	27342	92925	3399	8400	26200	3119	1600	1750	1094				120875
C. Terai	256782	812025	3162	50735	173516	3420	3076	3274	1064				988815
Central region	358440	1157961	3231	229488	639751	2788	62788	67950	1082	2006	1873	934	1867535
Manang				177	347	1960				300	456	1520	803
Mustang				516	758	1469				582	995	1710	1753
W. Mountain	0	0		693	1105	1595	0	0		882	1451	1645	2556
Gorkha	9756	20292	2080	17036	40887	2400	11605	13900	1198	394	399	1013	75478
Lamjung	14059	37772	2687	9650	22265	2307	7919	8861	1119	15	16	1067	68914
Tanahu	12538	44384	3540	22000	66000	3000	6340	6886	1086	193	187	969	117457
Kaski	22000	75544	3434	13773	31678	2300	14767	17720	1200	14	16	1143	124958
Parbat	8830	20924	2370	13930	25695	1845	8730	8750	1002	38	37	974	55406
Syangja	16800	59848	3562	26500	81562	3078	16505	18812	1140	230	172	748	160394
Palpa	6820	30266	4438	21583	42942	1990	2535	2573	1015	500	612	1224	76393
Myagdi	3738	12090.00	3234	9215	29488	3200	2740	3535	1290	148	150	1014	45263
Baglung	5874	17849	3039	19959	63771	3195	18605	22173	1192	84	121	1440	103914
Gulmi	9992	25815	2584	23094	50674	2194	2900	3015	1040	212	271	1278	79775
Arghakhanchi	8050	23345	2900	16500	49350	2991	2900	3080	1062	275	280	1018	76055
W. Hills	118457	368129	3108	193240	504312	2610	95546	109305	1144	2103	2261	1075	984007
Nawalparasi	44500	157872.73	3548	8252	12940	1568	500	516	1032	200	105	525	171434
Rupandehi	69600	275880	3964	2500	10000	4000	50	55	1100			0	285935
Kapilbastu	58000	128520	2216	3100	9500	3065			0			0	138020
W. Terai	172100	562273	3267	13852	32440	2342	550	571	1038	200	105	525	595389
Western region	290557	930402	3202	207785	537857	2589	96096	109876	1143	3185	3817	1198	1581951
Dolpa	276	475	1721	220	256	1164	391	390	997	682	950	1393	2071
Mugu	1400	2196	1569	621	928	1494	4275	4178	977	485	500	1031	7802
Humla	574	443	772	118	94	797	1270	850	669	670	685	1022	2072

District	Paddy			Maize			Millet			Buckwheat			Total
	Area (ha)	Production (mt)	Yield (kg/ha)	Area (ha)	Production (mt)	Yield (kg/ha)	Area (ha)	Production (mt)	Yield (kg/ha)	Area (ha)	Production (mt)	Yield (kg/ha)	
Jumla	2900	5900	2034	4505	6307	1400	3840	4250	1107	87	97	1115	16554
Kalikot	2500	4726	1890	2930	4445	1107	1230	1558	1267	90	139	1544	10868
MW Mountain	7650	13740	1796	9304	11835	1272	9863	9765	990	2014	2371	1177	37711
Rukum	3562	10481	2942	16276	32274	1983	918	1601.25	1744				44356
Rolpa	4715	11928	2530	11665	26830	2300	1061	1295	1221	115	115	1000	40168
Pyuthan	6525	23135	3546	12043	22766	1890	1990	2190	1101	13	15	1154	48106
Salyan	6951	25371	3650	19395	39759	2050	1053	1648	1565	61	73	1197	66851
Jajarkot	3063	5580	1822	9365	15540	1659	1850	1540	832	28	30	1071	22690
Dailekh	8307	26529	3194	20150	35292	1751	2423	2450	1011	27	30	1111	64301
Surkhet	13252	42803	3230	15251	33464	2194	2095	2835	1353				79102
MW Hills	46375	145827	3145	104145	205925	1977	11390	13559.25	1190	244	263	1078	365574
Dang	36508	123870	3393	23150	53093	2293	15	15	1000	20	21	1050	176999
Banke	31900	92725	2907	8500	18913	2225							111638
Bardiya	48500	173500	3577	1500	4887	3258							178387
MW Terai	116908	390095	3337	33150	76893	2320	15	15	1000	20	21	1050	467024
Mid-western region	170933	549662	3216	146599	294653	2010	21268	23339.25	1097	2278	2655	1165	870309
Bajura	3310	8606	2600	790	1950	2220	2610	2688	1030	7	11	1571	13255
Bajhang	7006	21791	3110	3680	5690	1546	2268	2250	992	7	7	1000	29738
Darchula	4480	10061	2246	3858	6816	1767	1310	1300	992	100	85	850	18262
FW Mountain	14796	40458	2734	8328	14456	1736	6188	6238	1008	114	103	904	61255
Achham	16571	31539	1903	3650	10693	2930	3413	3550	1040				45782
Doti	10668	22114	2073	3502	7354	2100	4369	5012	1147	5	5	1000	34485
Baitadi	7000	16470	2353	14500	18945	1307	710	750	1056				36165
Dadeldhura	5225	17419	3334	3745	10112	2700	295	300	1017				27831
FW Hills	39464	87542	2218	25397	47104	1855	8787	9612	1094	5	5	1000	144263
Kailali	71250	233250	3274	5550	15618	2814	350	350	1000	7	11	1571	249229
Kanchanpur	45796	145207	3171	2750	7125	2591							152332
FW Terai	117046	378457	3233	8300	22743	2740	350	350	1000	7	11	1571	401561
Far-western region	171306	506457	2956	42025	84303	2006	15325	16200	1057	126	119	944	607079
N e p a l	1362908	4299079	3154	891583	2231517	2503	266799	302398	1133	10842	11641	1074	1362908

Annex B: Summary of findings from the joint crop assessment missions

		Eastern region	Central region	Western region	Mid-western region	Far-western region
1	Districts visited	Sankhuwasabha, Bhojpur, Sunsari	Kavre, Sindhuli, Ramechhap, Dolakha, Sindhupalchok, Dhading, Rasuwa, Nuwakot	Rupandehi, Palpa, Gorkha	Banke, Surkhet, Humla	Bajura, Dadeldhura
2	Summer crop situation					
	Water availability	Adequate	Not sufficient	Not sufficient, not timely	Not sufficient; in Humla (not sufficient for buckwheat and *chino*)	Not sufficient
	Planting dates	Normal	Normal	2 weeks late	Late by 1 -2 weeks; normal in Humla	Late
	Harvest dates	Normal	Normal	Normal	Late; normal in Humla	Normal
	Rainfall	Adequate to excessive	Late and inadequate	Late and inadequate	Late and inadequate; On time but inadequate in Humla	Late and inadequate
	Temperature	Normal	Normal	Normal	High; Low in Humla	Normal
	Overall production	Increasing	Decreasing	Decreasing (10% in Rupandehi; 40% in Gorkha, and 12% in Palpa)	Decreasing, 15-20% expected; Decreasing in Humla	Decreasing
	Major rice varieties	Local (Bhotange, Halkudo, Belguti), Atte, Yellow marshy, Bhangeri, Laldhoj, Khumal 4 /5, Basmati, Radha 11/12, Mithila, Ranjit, Sona Masuli, Pokhreli Masina, etc	Chinung 242; Khumal-2,4, 6, 8, 13; Makwanpur-1; Sabitri; Radha-17; BG-4; Masina; Ramdhan; Pandeu; Hardinath-1; Pokhreli; Kanchan; Marsi; Bansbote; Rambilas; Shivapuri; Malika (local)	Radha-4; Swarna Sub-1; Gorakhanath; Sabitri; Rampur Masuli,; Khumal-4; Malesiya, Ramdhan; Hardinath	Radha-4, Shankar, Shama Masuli, Sabitri, US_312 hybrid, Gorakhnath, Dada Masuli, Radha-9	Radha-4, Bijanthi, Jadan (local), Thapachini, Himali, Pokherali Masino, Taichung, Khumal-4, Chainpur, Hansraj
	Major maize varieties	Manakamana-3, Arun-2, Deuti	Rampur composite, Deuti, Rajkumar (hybrid), Manakamana-1, Arun-2	Rampur composite, Deuti, Rajkumar (hybrid), Manakamana-1, Arun-2	Rampur composite, Sarlahi Seto, Hybrid (winter)	Manakamana-3, Arun-2, Deuti
3	Winter crop situation					
	Water availability	Adequate	-	Not sufficient	-	-
	Planting dates	-	-	Late due to lack of seed and fertilizer	-	-
	Harvest dates	-	-	-	-	-
	Rainfall	-	-	Late	-	-
	Temperature	-	-	Normal	-	-
	Overall production	-	-	-	-	-

		Eastern region	Central region	Western region	Mid-western region	Far-western region
	Major wheat varieties	NL-297, Gautam, Bijaya, Annapurna 1, RR21, WK-1204	BL-1473, Gautam, WK-1204, Pasang Lhyamu, Annapurna	Gautam, Bhirkuti, Bijaya, WK-1204;	Gautam, Bijaya, NL-297, WK1204, Bhrikuti: In Humla (Local and Annapurna 3, 4)	Awn-less wheat, Local (Rate), Jadiya Local (Mudule), WK 1204, NL-297
4	Input Supply					
	Fertilizer	Easy access but insufficient	Lack of fertilizer	Insufficient and lack of fertilizer	Easy access for early buyers; less supply b/c border closed, less available in Humla	Easy access for those who use
	Improved seeds	Easy access	Lack of seeds	Untimely and lack of seeds	Easy access for early buyers; less supply b/c border closed, less available in Humla	Not readily available
	Draft power	Oxen in hills, some tractors and combines in Terai	Mostly oxen but also tractors	Lack of fuel; tractor price increased	Oxen in hills & mountains, power tillers, some tractors and combines in Terai; diesel shortage; tractor price high	Oxen in hills
	Labor	Available via mutual help	Available via mutual help but scarce	Lack of youth labor	Available via mutual help	Available via mutual help
	Farm credit	Available via mutual help	Available via farmers' cooperatives and micro-credits	Available via cooperatives and farmers saving, gov't system is slow, formalities, e.g., Lalpurja	Available via micro-credits, but less in Humla	Available via micro-credits and cooperatives
5	Farm gate price (NPR /kg)					
	Rice	20 - 30 NPR	20-28 NPR	19 NPR (Bhairahawa); 20 NPR (Palpa); 22 NPR (Gorkha)	16 -19 NPR	16 - 30 NPR
	Wheat	25 – 30 NPR	25 NPR	23 NPR (Palpa);	22 – 25 NPR	25 – 40 NPR
	Maize	19 – 22 NPR	22-28 NPR	18 NPR (Bhairahawa); 21 NPR (Palpa); 32 NPR (Gorkha)	25 - 30 NPR	20 - 30 NPR
	Potato	10 – 50 NPR	13-30 NPR		20 – 30 NPR, 50 NPR (Humla)	25 – 40 NPR
6	Area specific problems and constraints	Lack of irrigation, mechanization in hills and mountains, market access; insufficient fertilizers and seeds; high cost of production and market price for cereals.	Lack of irrigation, technical knowledge, mechanization in hills and mountains, chemical fertilizer and seeds, proper price of agricultural products, markets, labor force; pest/diseases.	Lack of irrigation, labor, chemical fertilizer and seeds, technical knowledge; pest and diseases; increased cost of all agricultural tools and labor.	Lack of irrigation, seeds and fertilizers due to the border disruptions; pest/diseases in vegetables and potato; dry spell reported in Humla	Lack of irrigation, mechanization in hills and mountains; small and fragmented land holdings; Lack of coordination and linkage with agri-service providers; lack of markets.

Annex C: Summary of paddy crop cuts from the joint crop assessment missions

Location	Coordinates		Variety (paddy)	Yield (mt/ha) with moisture			Average yield (mt/ha)	Remarks
	Latitude	Longitude		Sample plot #1	Sample plot #2	Sample plot #3		
EASTERN DEVELOPMENT REGION								
District: Bhojpur, VDC / NP: Pyauli Ward: 4	-	-	Belguti	7.5 (moisture reading N/A)	6.7 (moisture reading N/A)	7.42 (moisture reading N/A)	7.21	Management adequate
District: Bhojpur, VDC / NP: Pyauli Ward: 3	-	-	Bhangeri	4.0 (moisture reading N/A)	4.45 (moisture reading N/A)	4.9 (moisture reading N/A)	4.45	Rainfed conditions
District: Bhojpur, VDC / NP: Charaudi, Ward: 9	-	-	Kalo Masino	7.0 (moisture reading N/A)	6.5 (moisture reading N/A)	8.2 (moisture reading N/A)	7.23	Management adequate
District: Sankhuwasabha, VDC / NP: Birendranagar NP, Ward: 14 Community: Manikapur	-	-						No standing crops
District: Sunsari, VDC / NP: Itahari Ward: 16, Community: Jharapatta	26.747˚N	87.214˚E	Ranjit	7.5 (moisture reading N/A)	7.0 (moisture reading N/A)		7.25	
CENTRAL DEVELOPMENT REGION								
District: Kavre, VDC/NP: Methinkot, Ward: 4, Community: Kasimtar	27.577 ˚N	85.646 ˚E	Chainung-242	5.4 (moisture reading N/A)	5.38 (moisture reading N/A)	5.3 (moisture reading N/A)	5.36	Rainfed
District: Kavre, VDC/NP: Mahadevsthan, Ward: 2 Community: Kunta Dhaitar	27.712 ˚N	85.609 ˚E	Makwanpur-1	10.25 (with moisture 13.2)	-	-	10.25	Irrigation facility during crop season, well managed plot
District: Kavre, VDC/NP: Mahadevsthan, Ward: 2 Community: Kunta Dhaitar	27.710 ˚N	85.610 ˚E	Makwanpur-1	8.0 (with moisture 10.0)	10.0 (with moisture 12.0)	-	9.0	Irrigation facility during crop season, well managed plot
District: Sindhuli, VDC/NP: Dadiguranse, Ward: 8 Community: N/A	27.212 ˚N	85.813 ˚E	Radha-17	4.5 (with moisture 5.2)	3.7 (with moisture 4.3)	-	4.1	Irrigation facility during crop season, not well managed
District: Sindhuli VDC/NP: Kamalamai, Ward: 1	27.257 ˚N	85.882 ˚E	Radha-17	3.5 (with moisture 4)	-	-	3.5	Rainfed and not well managed plot
District: Ramechhap, VDC/NP: Pakarbas, Ward: 4	27.380 ˚N	86.022 ˚E	Makwanpur-1	8.17 (with moisture 9.5)			8.17	Rainfed but well managed plot
District: Ramechhap, VDC/NP: Manthali, Ward: 2	27.387 ˚N	86.059 ˚E	Makwanpur-1	7.99 (with moisture 9.86)	7.56 (with moisture 8.31)		7.78	Irrigation facility during crop season, well managed plot

Location	Coordinates		Variety (paddy)	Yield (mt/ha) with moisture			Average yield (mt/ha)	Remarks
	Latitude	Longitude		Sample plot #1	Sample plot #2	Sample plot #3		
District: Sindhpalchok, VDC/NP: Fatakshila, Ward: 2	27.779 ˚N	85.574 ˚E	Makwanpur-1	5.0 (with moisture 8.0)	4.8 (with moisture 7.4)		4.9	Irrigation facility during crop season; well managed plot
District: Sindhupalchok, VDC/NP: Sikharpur, Ward: 4	27.811 ˚N	85.583 ˚E	Hybrid US-312	9.5 (with moisture 10.9)			9.5	Irrigation facility during crop season; well managed plot
District: Dolakha	-	-						No standing crop
District: Dhading, VDC/NP: Sunaula Baazar, Ward: 7 Community: Kathare/Talloo besi	27.898˚N	84.88˚E	Sabitri	6.43 (moisture reading N/A)	6.39 (moisture reading N/A)	6.42 (moisture reading N/A)	6.41	
WESTERN DEVELOPMENT REGION								
District: Palpa, VDC/NP: Nararnamfales, Ward: 1 Community: Kokhe	27.6˚N	83.483˚E	Malesiya	2.64 (12% moisture)	4.6 (12% moisture)	4.5 (12% moisture)	3.91	Loss 0.6, normal production is 4.5/ha.
District: Gorkha, VDC/NP: Gorkha Mun, Ward: 9, Community: Taranagar	27.983˚N	84.567˚E	Sabitri	5.19 (12% moisture)	3.56 (12% moisture)	5.06 (12% moisture)	4.6	
MID-WESTERN DEVELOPMENT REGION								
District: Banke, VDC / NP: Nepalgunj Sub MPC, Ward: 26 Community: Rajhagaun	28.1˚N	81.653˚E	Sawa Masuli	4.41 (16.1% moisture)	3.42 (16.3% moisture)	4.36 (16.2% moisture)	4.06	Highly managed plot; despite drought and fuel shortage, good yield reported.
District: Banke, VDC / NP: Nepalgunj Sub MPC, Ward: 26 Community: Rajhagaun	28.102˚N	81.653˚E	Radha-4	1.77 (17.3% moisture)	-		1.77	No management practices. Fully rainfed conditions.
District: Surkhet, VDC / NP: Birendranagar NP, Ward: 26 Community: Itaura	28.574˚N	81.601˚E	Thulo Masuli	7.71 (15.7% moisture)	8.368 (16% moisture)	7.541 (16.1% moisture)	7.87	Well managed plot. Year-round irrigation.
District: Surkhet, VDC / NP: Birendranagar NP, Ward: 14 Community: Manikapur	28.552˚N	81.632˚E	Radha -9	4.16 (18.4% moisture)	3.648 (18.3 % moisture)	6.693 (17.9% moisture)	4.84	Rainfed conditions, water was available during later stages.