Crop Situation Update

A joint assessment of 2014/15 winter crops

Ministry of Agricultural Development

Food and Agriculture Organization

World Food Programme

Table of contents

Highlights 1

2014/15 winter crop situation 1

Trade and food market situation 1

2014/15 national cereal food availability 1

Validation of CRAFT 2015 winter crop outlook 2

Background and objectives 2

Methodology 2

2014/15 national winter crop output 4

Wheat 4

Barley 7

Growing conditions for 2014/15 winter crops 7

Rainfall 7

Input supply 10

Food market situation 10

2014/15 cereal trade overview 12

Global and regional production overview 12

2014/15 total cereal production and national food availability 13

Conclusion and winter crop outlook 16

Validation of CRAFT 2015 winter crop outlook 16

Annex A: Area, production and yield of 2014/15 winter crops and cereal balance at the national, sub-regional and district level 17

Annex B: Summary of the winter crop assessment mission, April 2015 20

Annex C: Case study 22

Annex D: Crop cut results 23

Acknowledgements

This report is a joint product of the Ministry of Agricultural Development (MoAD), World Food Programme (WFP), and Food and Agriculture Organization (FAO).

New partnerships with the CGIAR Research Programme on Climate Change, Agriculture and Food Security (CCAFS) and the International Centre for Integrated Mountain Development (ICIMOD) have enabled the integration of crop yield forecasting and remote sensing in this report and expanded the range of expertise available during joint crop assessment missions.

Thanks are due to staff members of the MOAD, Agribusiness Promotion and Market Development Directorate (ABPMDD) of the Ministry and the Department of Agriculture and staff members of WFP, FAO, CCAFS, and ICIMOD.

नेपाल खाद्य सुरक्षा अनुगमन प्रणाली
Nepal Khadhya Surakshya Anugaman Pranali (NeKSAP)
Nepal Food Security Monitoring System

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.

http://www.neksap.org.np

This product is funded by the European Union. The views expressed in this publication do not necessarily reflect the views of the European Commission.

Highlights

2014/15 winter crop situation

The Ministry of Agricultural Development (MoAD) estimates total production of winter crops (wheat and barley) at 2.0 million mt, an increase of 10.86 percent compared to the preceding five-year average (the normal level)[1] and 4.95 percent compared to the 2013/14 season. As in the 2013/14 season, the central region recorded the largest share of wheat production (32.6 percent of the total), with 644,063 mt of wheat produced. Dhanusha, Rupandehi, Kapilvastu, Bara and Kailali were the top five wheat-producing districts in 2014/15. Above-normal rainfall was reported during the growing season and is believed to have provided the optimum moisture requirement for the winter wheat crop, but the prolonged withdrawal towards the harvest period adversely affected the wheat and lentil harvest in some districts. MoAD estimates the overall cereal production (summer and winter) for 2014/15 at 9.26 million mt, a decrease of 3.1 percent compared to last year (2013/14).

Trade and food market situation

According to the Trade and Export Promotion Centre (TEPC), the value of foreign trade during the first eight months of the fiscal year 2071/72 (July – March 2014/15) stood at 561.9 billion NPR, an increase of 6.7 percent compared to the same period last year (2070/71). The share of exports and imports stood at 10.1 percent (56.92 billion NPR) and 89.9 percent (504.98 billion NPR) respectively. During this eight-month period, the share of cereals in total imports was 4.45 percent (22.5 billion NPR), which over the same period last year was 3.57 percent (16.88 billion NPR).

According to Nepal Rastra Bank, the overall year-on-year wholesale price index (WPI) increased by 5.1 percent in May 2015 compared to an increase of 9.1 percent in May 2014, whereas the WPI of food grains showed an increase of 11.3 percent in May 2015 compared to an increase of 8.3 percent in May 2014. Likewise, the overall year-on-year wage rate index (WRI) increased by 7.1 percent in May 2015 compared to an increase of 12.9 percent in May 2104. The WRI of agricultural labour increased by 8.7 percent in May 2015 compared to an increase of 8.4 percent in May 2014.

The third advance estimate of major crops in India for the 2014/15 season projects the 2015 wheat production at 90.8 million mt, 5 million mt less than the record level production in 2013/14 season.

2014/15 national cereal food availability

The Ministry of Agricultural Development (MoAD) estimated the total edible cereal production for human consumption at 5.5 million mt against the national requirement of 5.35 million mt. Despite the aggregate national surplus of 0.15 million mt, there is a deficit at the sub-regional and district levels. Based on the local cereal crop production and cereal food requirements 32 districts are cereal food deficit in 2014/15. This includes 4 in the far-western development region, 7 in the mid-western development region, 3 in the western development region, 13 in the central development region and 5 in the eastern development region. In those districts, local cereal production was not sufficient to meet the local cereal demand.

[1] The normal level refers to the average area and production of the preceding five-year period.

Validation of CRAFT 2015 winter crop outlook

According to the Consultative Group for International Agricultural Research (CGIAR) Programme on Climate Change, Agriculture and Food Security (CCAFS) Regional Agriculture Forecasting Toolbox (CRAFT) the forecasted wheat production for the 2014/15 winter season is 1,994,598 mt. The MoAD estimation of wheat production was 1,975,607 mt. Based on the results of the CRAFT model, the forecasted and estimated outlook are similar and thus provides sufficient ground for the model's validation. The increased production figures can also be validated through satellite imagery (MODIS) based crop area estimation carried out by the International Centre for Integrated Mountain Development (ICIMOD), which forecasted a 10 percent increase in the wheat crop area in the Terai region compared to last year.

Background and objectives

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 is one component of the Nepal food security monitoring system (NeKSAP), which is supported by the European Union.

Since 2014, partnerships with the CGIAR Research Programme on Climate Change, Agriculture and Food Security (CCAFS) and the International Centre for Integrated Mountain Development (ICIMOD) have expanded the use and integration of new technologies in crop monitoring and assessment in NeKSAP. These outputs are included in this report.

While periodic updates on crop performance and the food security situation are provided through the Nepal Food Security Bulletin (issued by MoAD and WFP on a trimester basis), the Crop Situation Update provides a comprehensive overview of the domestic food supply situation by focusing on the production and trade of major summer and winter crops in Nepal. This edition of the Crop Situation Update covers the 2014/15 (Nepali Fiscal Year 2071/72) winter crop production and the results of the validation of the winter wheat production for 2015 (Nepali Fiscal year 2071/72). In addition, it also looks at the comprehensive cereal crop production in the country and trade of key cereals between 2014 and 2015.

This report is available in print and electronic format (http://neksap.org.np/crop-situation-update).

Methodology

The Crop Situation Update relies on the following secondary and primary sources of information. Secondary data is compiled from MoAD's preliminary estimates of winter crop production (See **Annex A**) and information on input supplies, including fertilizers and seeds; 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.

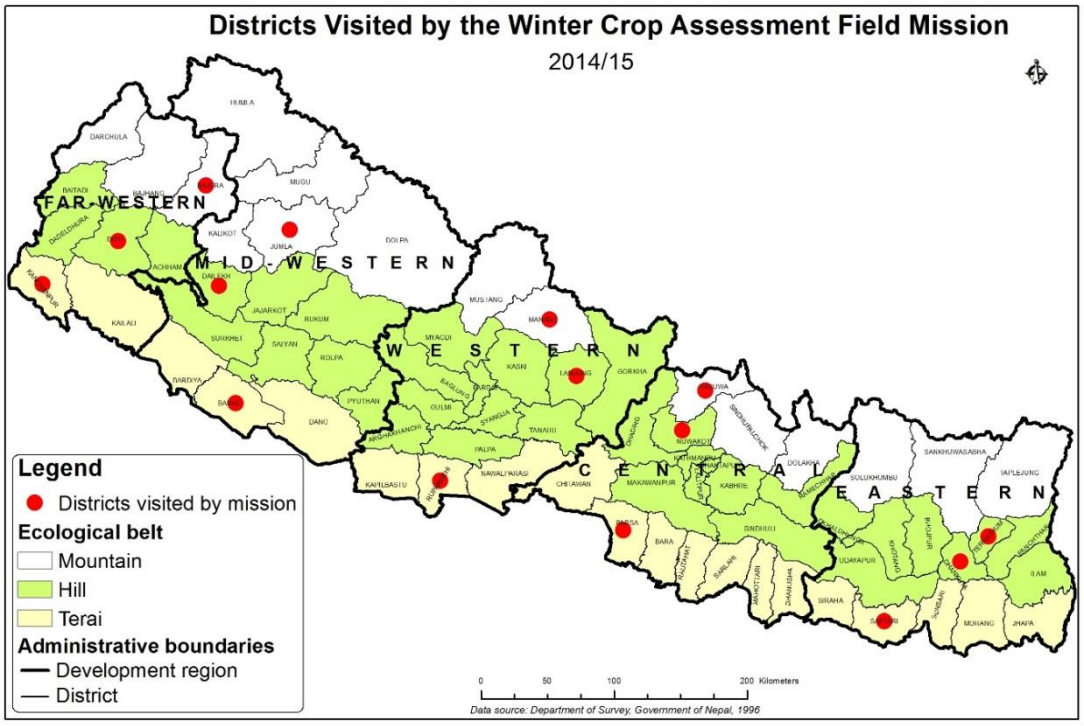
Furthermore, the International Centre for Integrated Mountain Development (ICIMOD), through the use of remote sensing technology and satellite imagery of TERRA/AQUA MODIS, calculated the Normalized Difference Vegetation Index (NDVI) and identified anomalies of crop plantation area and crop growth pattern in the Terai region. The anomaly maps were used to validate the crop grown areas in the assessment districts. ICIMOD also provided maps of rainfall using CHIRPS 2.0 data. In addition, the CGIAR Research Programme on Climate Change, Agriculture and Food Security (CCAFS) Regional Agriculture

Forecasting Toolbox (CRAFT), a crop yield forecasting tool customized for South Asia, was used to estimate the national wheat production. CRAFT incorporates a crop simulation model (DSSAT), weather and seasonal forecast module (CPT) and a GIS mapping module (Map Win GIS).

Primary data was collected through joint crop assessment missions, comprised of representatives from MoAD, WFP, and ICIMOD. Missions included field verifications and stakeholder consultations in selected districts to substantiate the secondary information and document key issues, constraints, and opportunities of the 2015 winter crop production. Missions included the following activities:

- Consultations with officials from District Agriculture Development Offices (DADOs) to get an overview of agricultural production and to understand the reasons behind deviations (if any);
- Discussions with district line agencies and stakeholders, including Chief District Officers, Local Development Officers, and the District Chamber of Commerce and Industries, on issues related to crop production and associated impacts on food supply and food security;
- Community interactions to verify information obtained through the DADO and other stakeholders, and to understand the communities' perceptions on agricultural production issues, weather conditions, livelihoods, and food security (see **Annex B and C**); and
- Sample crop cuts using 1m×1m plots to get an overview of the production (see **Annex D**).

Joint crop assessment missions took place from 17-26 April 2015 in 15 districts (See **Map 1**). Districts were selected in each development region, if they expected winter crop production losses, had not been included in earlier missions, and had observed NDVI anomalies during the normal plantation season. Prior to the missions MoAD organized a meeting to reach a common understanding among the mission members on the process and outputs. Following the missions, MoAD organized a debriefing meeting to share the preliminary findings. MoAD, WFP, FAO and ICIMOD provided techncal review of the report.



Map 1: Districts visited by the joint crop assessment field missions, April 2015

2014/15 national winter crop output

Wheat and barley are the major winter crops of Nepal. While wheat is grown across the country and makes a significant contribution to domestic food availability, barley occupies a smaller share of the land, is mostly planted in the mountains, and makes a marginal contribution to overall food availability in the country. In 2014/15, the share of wheat in total winter crop production was estimated at 98 percent.

Figure 1 shows the area and production of winter crops from 2005/06 to 2014/15. In 2014/15, the planted area of winter crops (wheat and barley) was 790,415 ha, with the corresponding production of 2,012,960 metric tons (mt).

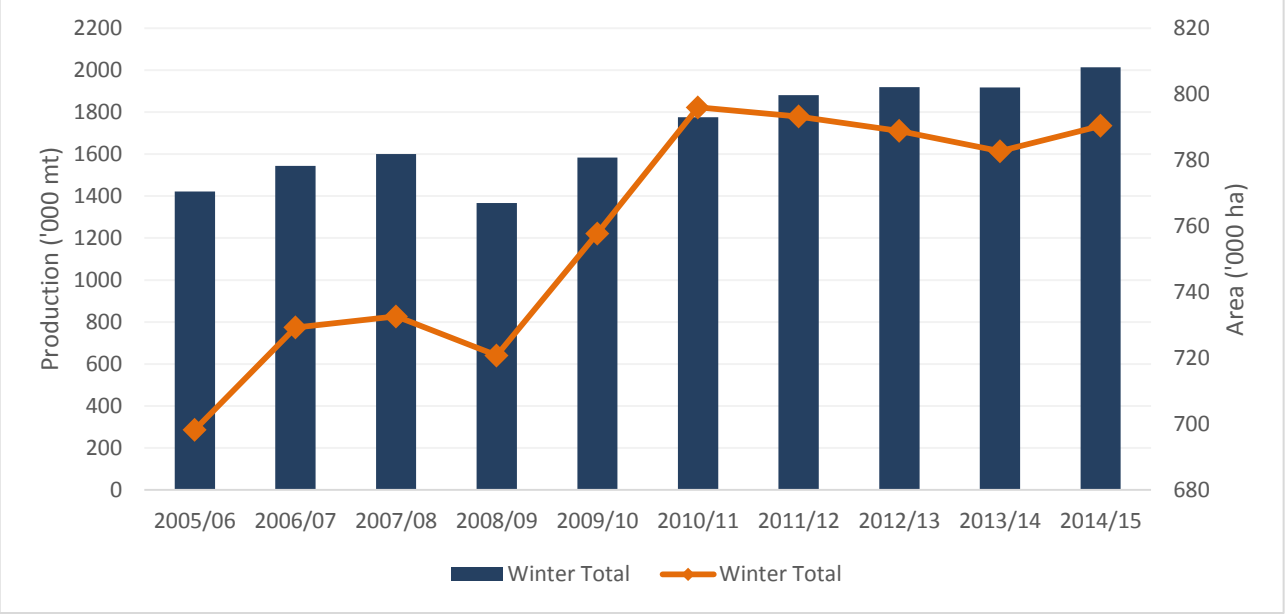


Figure 1: Area and production of winter crops (2005/06 to 2014/15). Source: MoAD

The area and production of winter crops has been gradually increasing since 2005/06, except for 2008/09 when the winter drought significantly reduced the area and production. The area of winter crops was highest in 2010/11 when it was 795,960 ha. Production during the 2014/15 season, however, has surpassed the previous highest level (in 2012/13) with the total production at 2,012,960 mt. The normal level, which is an average of area and production over the preceding five years (2009/10 to 2013/14) is 783,678 ha and 1,815,651 mt respectively. Compared to the normal level, production during the 2014/15 winter season has increased by 10.86 percent with an area increase of 0.86 percent, which indicates increasing winter crop productivity. Compared to last year (i.e. 2013/14), when area and production were 782,678 ha and 1,918,009 mt respectively, both area and production have increased in 2014/15 by 4.95 percent and 0.99 percent respectively.

Wheat

Wheat is a major winter crop and in terms of production it is the third most important cereal crop of Nepal after paddy and maize. It is grown as a winter crop in the hills and the Terai and as a summer crop in the mountains. In 2014/15, MoAD estimates the production and area at 1,975,607 mt and 762,367 ha respectively.

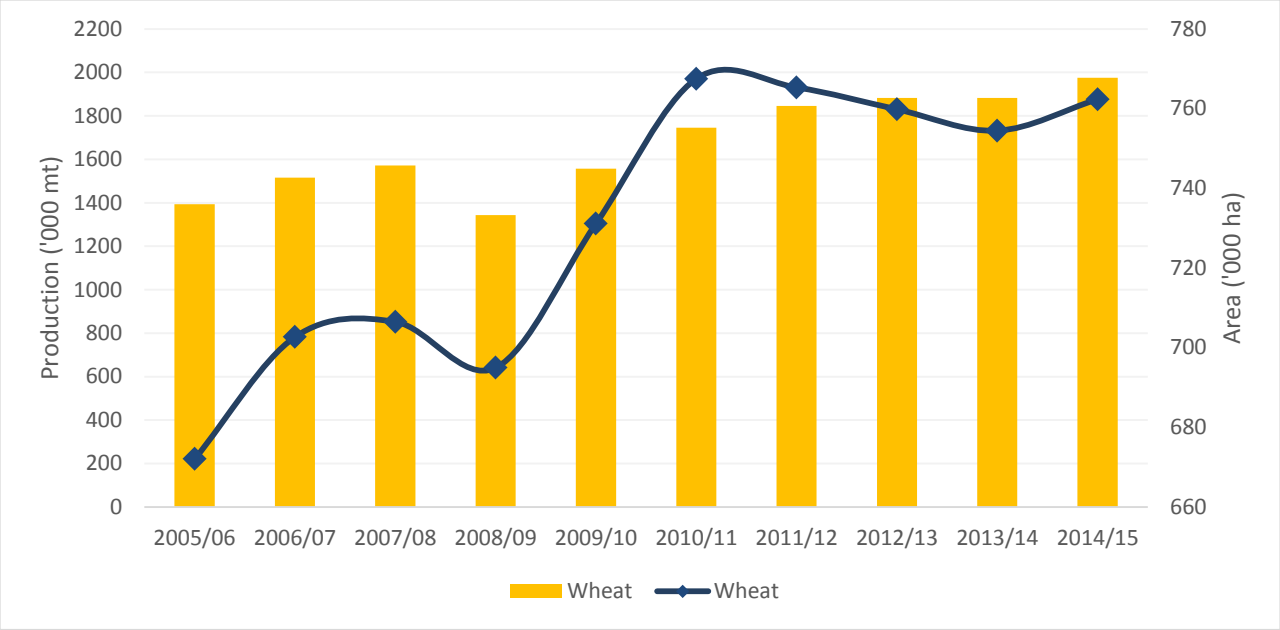


Figure 2: Area and production of wheat (2005/06 to 2014/15). Source: MoAD

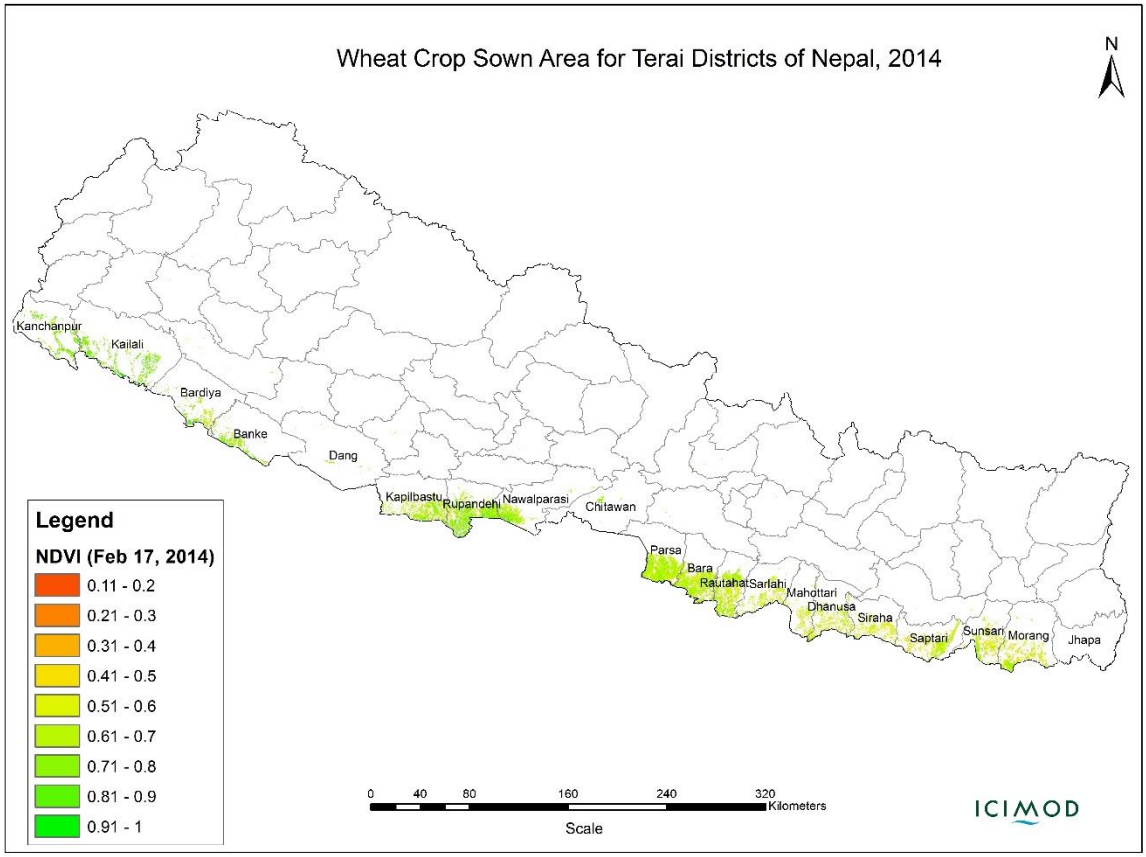
Figure 2 shows the area and production of wheat for the last 10 years, i.e. from 2005/06 to 2014/15. Both area and production have generally increased although there have been some yearly fluctuations. The drop in area and production of wheat in 2008/09 is attributed to the winter drought that resulted in significant crop losses that year. In the last decade 2014/15 had the highest wheat production of 1,975,607 mt and 2010/11 had the highest wheat planted area of 767,499 ha. Area and production levels in 2014/15 increased by 0.88 percent and 10.8 percent respectively compared to the normal level. Compared to 2013/14, the area increased by 1.05 percent and production increased by 4.9 percent.

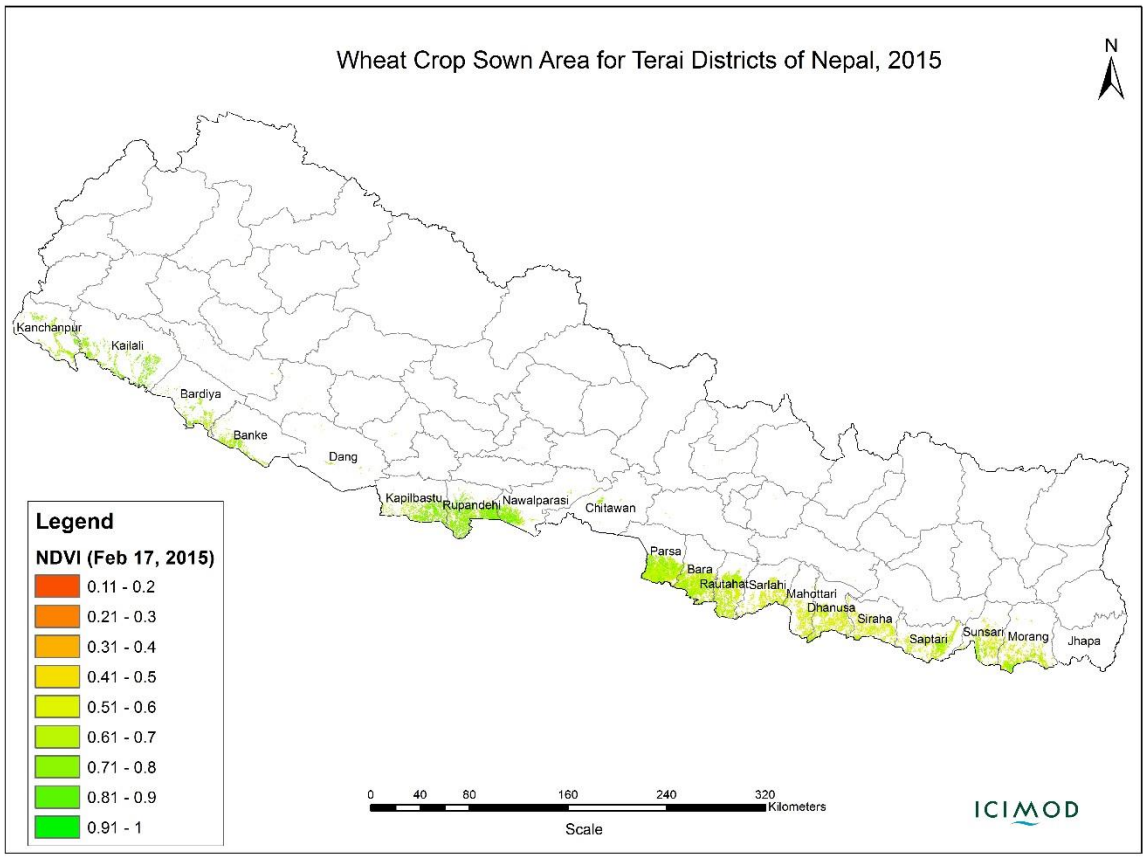
Table 1 shows the share of total wheat production in 2014/15 by development region. The central development region is the largest wheat producing region, with 644,063 mt of production. Its share in total wheat production is estimated at 33 percent. The central development region is followed by the mid-western and western development regions, with their share estimated at 20 percent and 19 percent respectively.

Development region	Wheat production (mt)	Share of total production (%)
Eastern	262,123	13%
Central	644,063	33%
Western	371,396	19%
Mid-western	392,707	20%
Far-western	305,320	15%

Table 1: Share by development region in total wheat production (2014/15 season). Source: MoAD

If disaggregated by ecological belt, the central Terai is the largest wheat producing belt with production estimated at 506,822 mt, followed by the western Terai (250,500 mt), mid-western hills (206,112 mt), eastern Terai (191,250 mt) and mid-western Terai (165,500 mt). At the district level Dhanusha, Rupandehi, Kapilvastu, Bara and Kailali are the top five wheat producing districts in 2014/15, with their respective production at 114,994 mt, 99,500 mt, 97,500 mt, 90,163 mt and 80,500 mt. **Maps 2 and 3** show the wheat crop sown area for the Terai districts in 2014 and 2015.





Maps 2 and 3: Wheat crop sown area for Terai districts in 2014 and 2015. Source: ICIMOD

Barley

Barley occupies a smaller share of land and accordingly makes a marginal contribution to overall food availability in the country. In 2014/15 barley was grown in 28,047 ha and production was recorded at 37,352 mt. **Figure 3** shows the area and production of barley for the last 10 years (i.e. from 2005/06 to 2014/15). As shown in the figure, the area and production of barley has been generally increasing each year with some notable fluctuations. For example, area and production of barley was the lowest in 2008/09 due to the winter drought. The average production of the preceding five years (i.e. the normal level) is estimated at 32,880 mt. Compared to the normal level, barley production increased by 13.6 percent during 2014/15. However, compared to last year (i.e. 2013/14), during which barley production stood at 34,866 mt, this year's production increased by 7.1 percent.

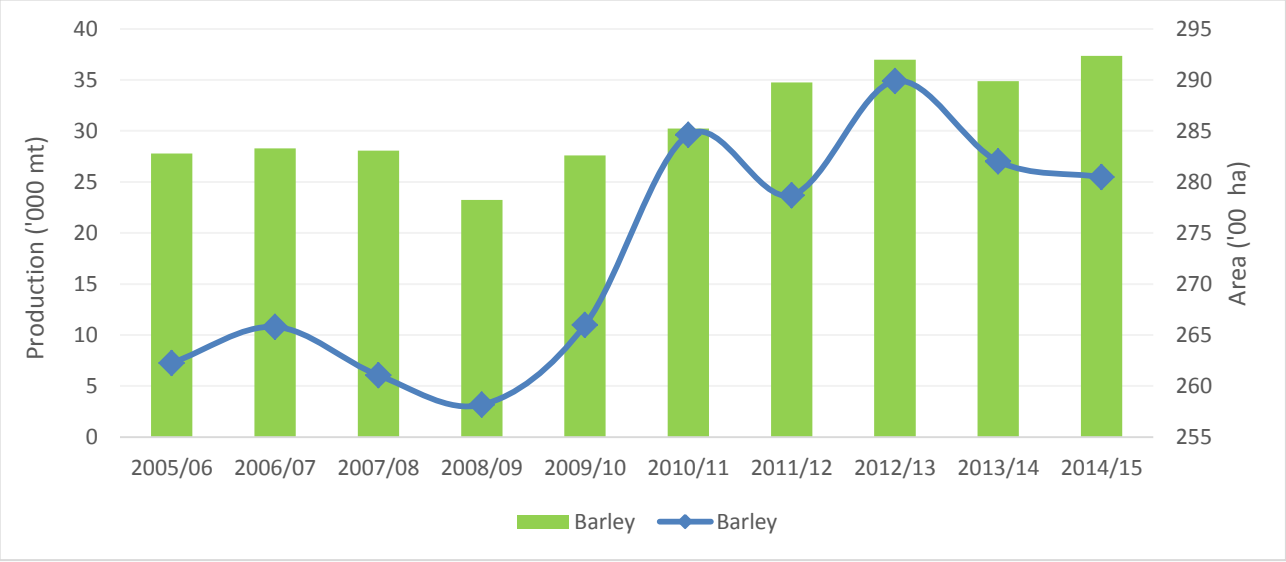


Figure 3: Area and production of barley (2005/06 to 2014/15). Source: MoAD

Growing conditions for 2014/15 winter crops

Growing conditions for 2014/15 winter crops was reported as normal. Rainfall was timely and adequate, and the supply of agricultural inputs (seeds and fertilizer) was also reported as normal. Subsidized wheat seeds made available through the Government of Nepal have also helped farmers adopt improved wheat seed varieties.

Rainfall

Almost 80 percent of the rainfall in Nepal comes from the monsoon from June to September. Winter rain, however, is typically due to the phenomenon known as a winter disturbance, when a tropical storm originating in the Mediterranean brings sudden winter rain and snow to the northwestern parts of the Indian subcontinent. This is a non-monsoonal precipitation pattern driven by the Westerlies. The moisture in these storms usually originates over the Mediterranean Sea and the Atlantic Ocean. Winter disturbances are important to the development of winter crops.

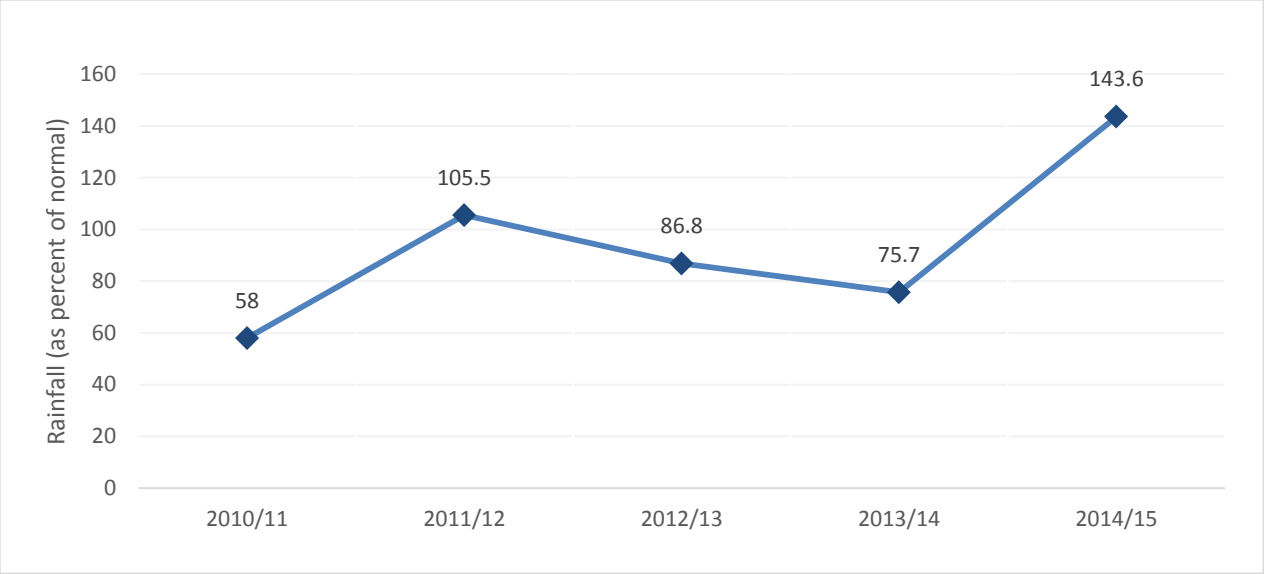


Figure 4: Average rainfall (as a percent of normal level) from Oct – Mar 2010/11 to 2014/15. Source: DHM

Overall rainfall for winter crops in 2014/15 was reported above the five-year average precipitation level (i.e., the normal level). **Figure 4** shows the average rainfall during October to March for the past five years. The average rainfall for the period of October 2014 to March 2015 was 143.6 percent of the normal precipitation level, which means that the rainfall was adequate for replenishing the soil moisture level to favor winter production.

Likewise, **Figure 5** shows monthly rainfall (as a percent of the normal level) from October to March (2010/11 to 2014/15). Although there was no rainfall recorded in November, rainfall increased in December and was reported as above normal for December, January and March. Winter rain was highest in March, during which it was above 350 percent of the normal level. Higher rainfall towards the end of the crop cycle was reported as adverse in some districts where farmers were unable to harvest ripened crops thereby leading to rotting of standing crops. However, severe damage was not reported.

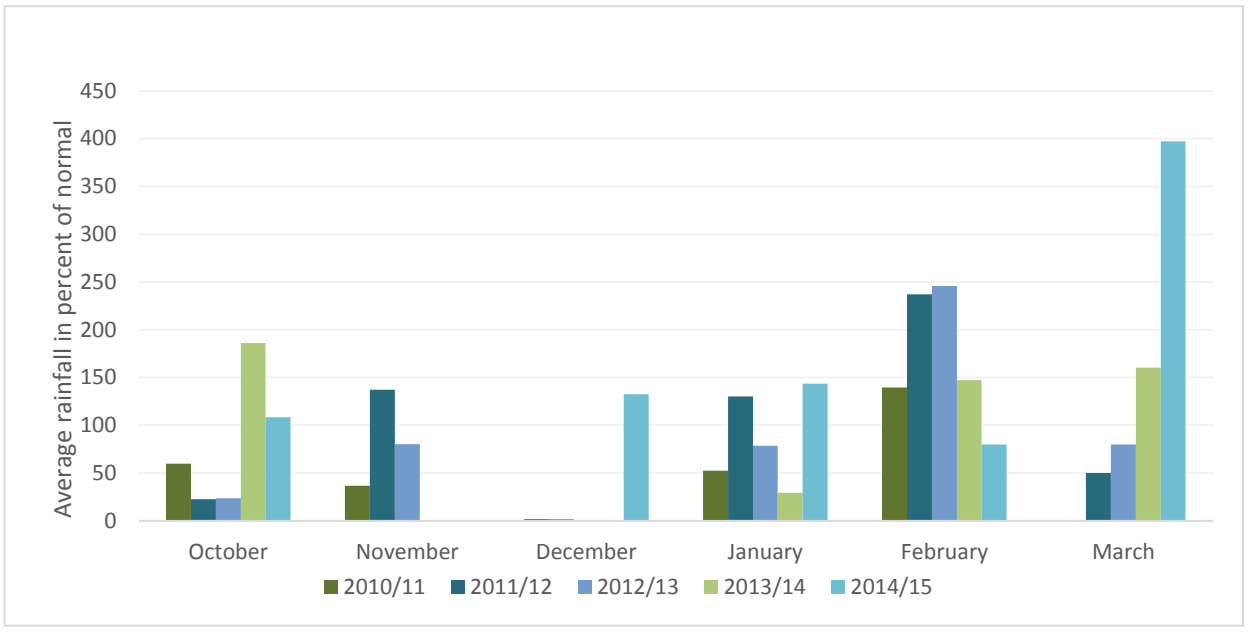
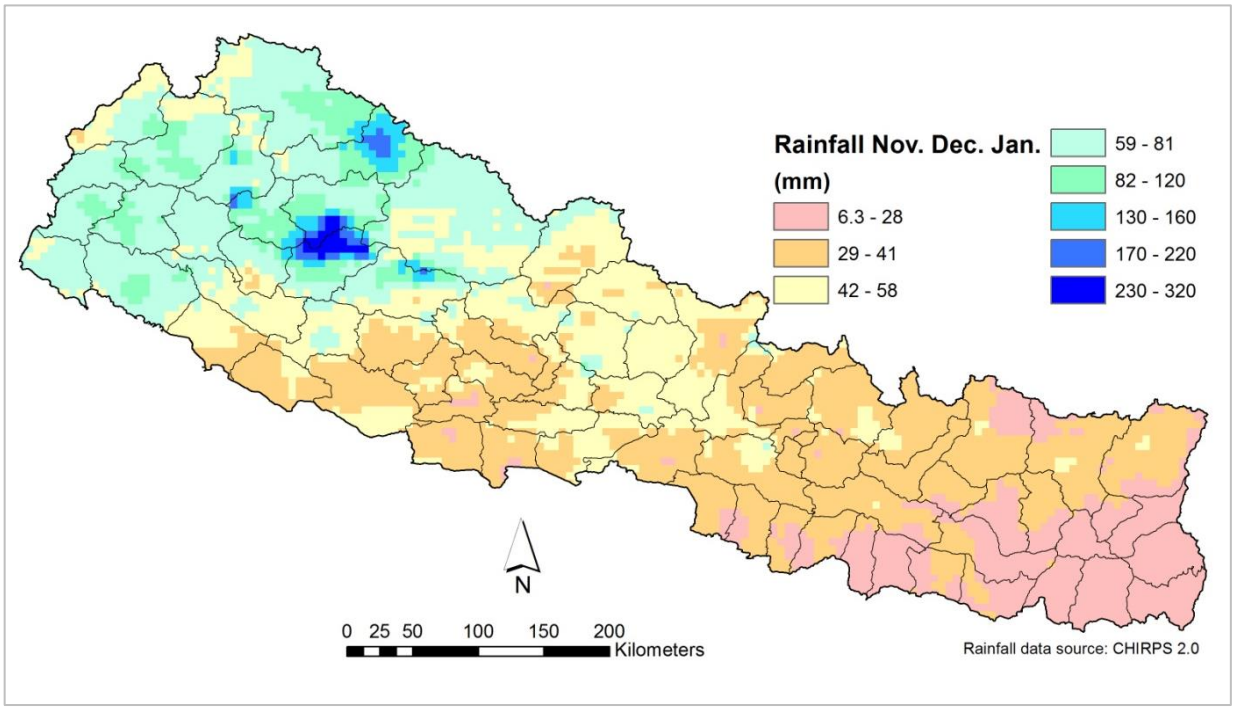
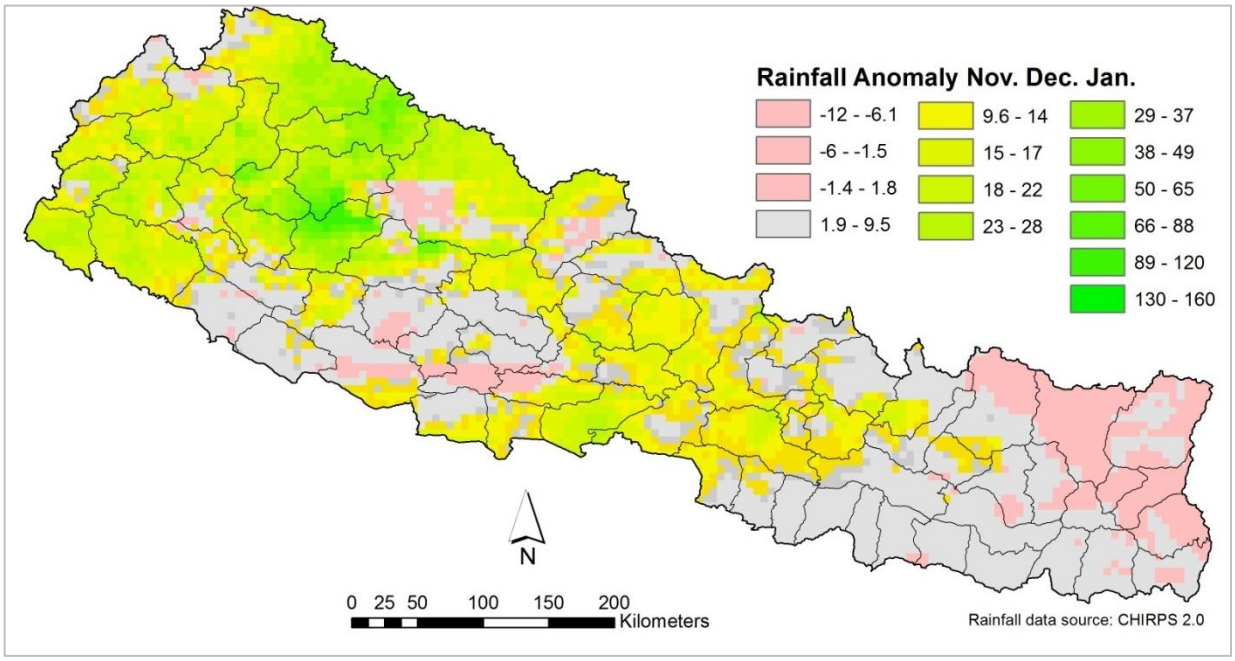


Figure 5: Monthly rainfall (as a percent of the normal level) from Oct – Mar 2010 - 2015. Source: DHM

Map 4 shows the cumulative rainfall (in mm) in the three-month period of December 2014, January 2015 and February 2015. The highest cumulative rainfall was in the hill and mountain districts of the mid-western and far-western regions, with parts of Jumla, Jajarkot and Mugu districts receiving the highest amount, while the lowest cumulative rainfall was in the Terai and hill districts in the eastern and central regions. **Map 5** shows the rainfall anomaly (in mm) in the three-month period of December 2014, January 2015 and February 2015 compared to the 30-year average.



Map 4: Cumulative rainfall (in mm) in December 2014 - February 2015. Source: ICIMOD



Map 5: Rainfall anomaly (in mm) in December-February, based on 30-year average. Source: ICIMOD

Input supply

Use of inputs is important to increasing productivity of the agricultural sector. Machinery, irrigation, fertilizers and seeds are the main inputs used in Nepal. However, there is no exact data on machinery use in the country. Nevertheless, the increasing use of tractors, sowing machines, combined harvesters and reapers indicate progressive agricultural mechanization, especially in the Terai.

With only 50.41 percent of the cultivable area (2,641,000 ha) irrigated during 2012/13, rain fed agriculture is the most common practice in Nepal[2]. Hence, winter crops also largely depend upon winter rain.

MoAD statistics show that the sale and per hectare usage of fertilizers is increasing. This can be attributed to the increased supply of subsidized fertilizer from the Government. However, in contrast to the Agriculture Perspective Plan (APP)'s estimate of 700,000 mt for the year 2014/15, the combined supply from Agriculture Inputs Company Ltd (AICL) and Salt Trading Corporation has been limited to 180,570 mt. Subsidized rates for fertilizers in India have enticed farmers in the Terai near the border to obtain fertilizers from India through different sources that are not accounted for in national data.

Use of improved and recommended seed varieties is also gradually increasing in Nepal. The supply of improved seeds from the National Seed Company (NSC), a government entity, is, however, unable to meet the demand from farmers. Last year, the company was able to supply 10,216 mt of wheat seeds and 6,829 mt of lentil seeds, with a seed replacement rate (SRR) of 11.3 and 4.1 percent respectively. However, the SRR target set for this year for wheat and lentils was 13.09 and 6.17 percent respectively.

Food market situation

Figure 6 shows the trend of wholesale prices of major winter crops (wheat, potato and lentil) in May 2013, 2014 and 2015[3]. Wholesale prices of wheat and lentils showed a marginal increase over this period. The price of wheat, the major winter cereal, increased by 4.2 percent year-on-year in May 2015 compared to an increase of 5 percent year-on-year in May 2014. The price of lentils increased by 4.6 percent year-on-year in May 2015 compared to an increase of 6.3 percent year-on-year in May 2014. The price of potato decreased by 10.3 percent year-on-year in May 2015 compared to an increase of 23.6 percent year-on-year in May 2014; the increase this year may be a result of an increase in supply compared to 2014.

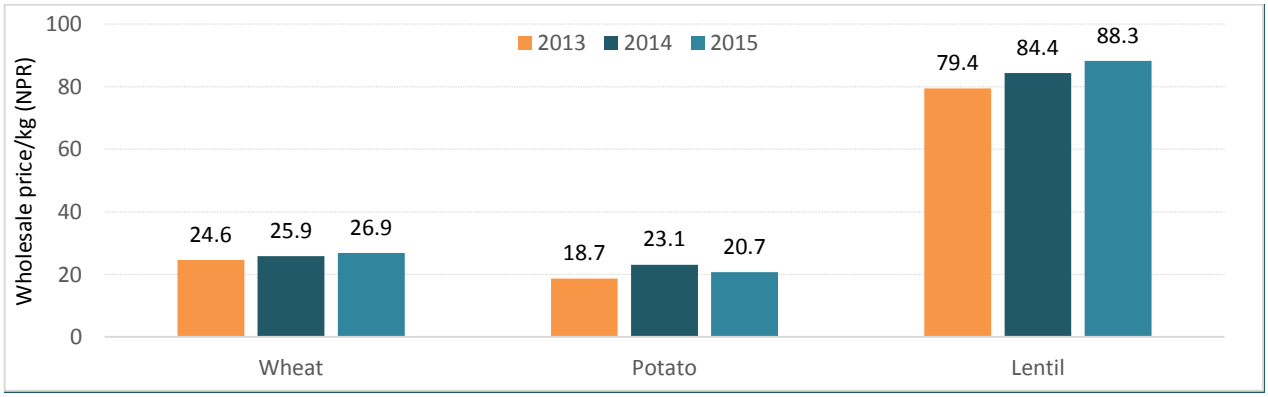


Figure 6: Wholesale price trend of major winter crops, May 2013-2015. Source: ABPSD/MoAD

[2] http://moad.gov.np/uploads/files/YearBook%202013.pdf

[3] The prices collected in May (following the harvest) are the average of nine markets in the Terai and hills (Kathmandu and Pokhara) sold by farmers at the market centre.

Figure 7 presents the year-on-year wholesale price index (WPI) in May 2013, 2014 and 2015. The overall WPI increased by 5.1 percent in May 2015 as compared to an increase of 9.1 percent over the same period last year. The WPI of agricultural commodities in May 2015 increased by 8.8 percent, which was 11.9 percent over the same period last year. The WPI of food grains increased by 11.3 percent in May 2015 compared to a 8.3 percent increase in May 2014. The WPI of pulses showed the greatest change, having increased sharply by 38.1 percent in May 2015 compared to a decline of 2.5 percent in May 2014; the sharp increase this year could be a result of increased demand and a decline in supply caused by lower pulse production in India, from where Nepal largely imports pulses[4].

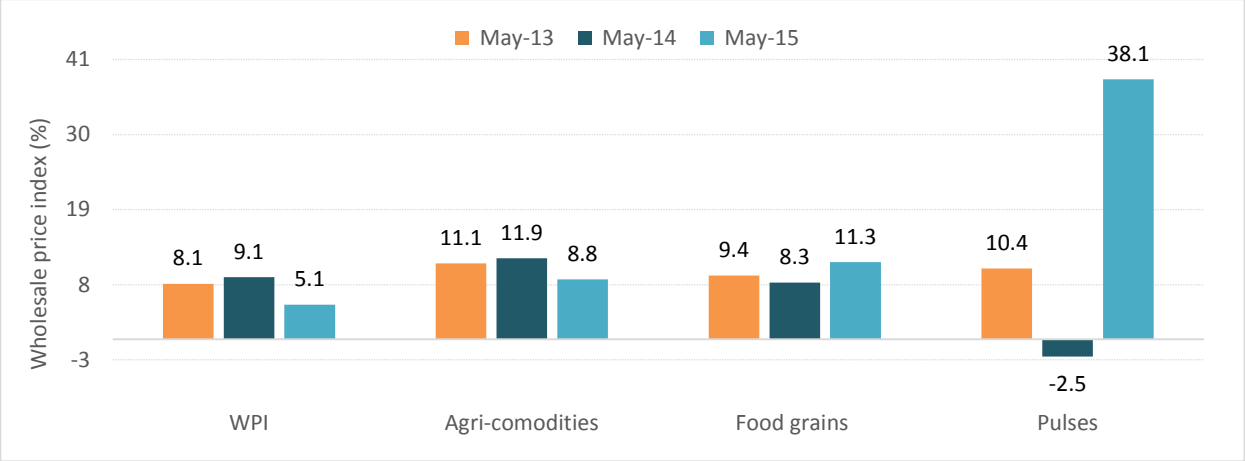


Figure 7: Wholesale price index (WPI) for May 2013-2015. Source: Nepal Rastra Bank

Figure 8 presents the year-on-year wage rate index (WRI) in May 2013, 2014 and 2015. The overall WRI increased by 7.1 percent in May 2015 compared to a 12.9 percent increase over the same period last year. The WRI of agricultural labour increased by 8.7 percent in May 2015 compared to an increase of 7.4 percent over the same period last year. In May 2015, the WRI of male and female agricultural wage labour increased by 12.8 and 4.6 percent respectively compared to an increase of 8.1 percent and 8.7 percent respectively over the same period last year; this marked difference in wage labour rates may reflect both a decrease in male labours due to out-migration and an increase of female labours in the labour market.

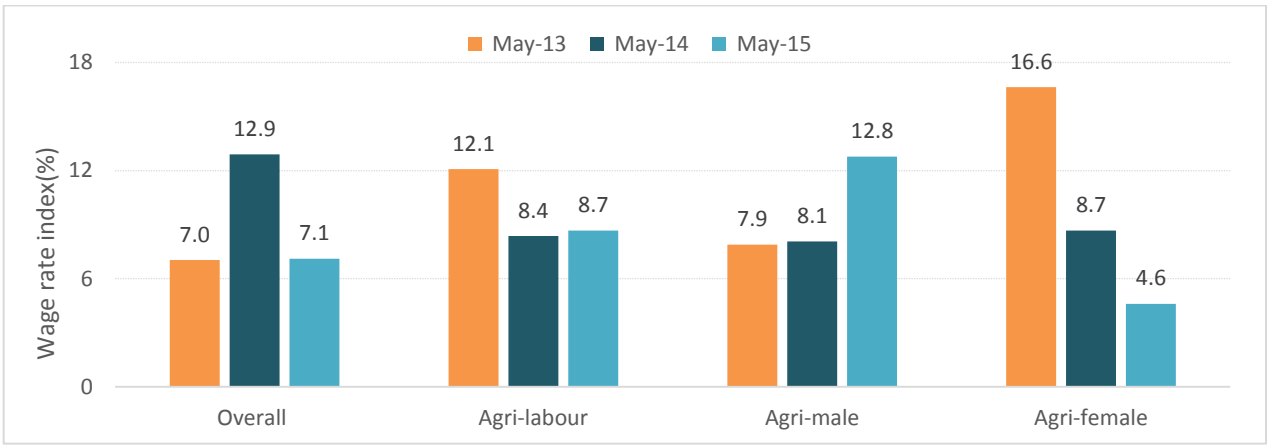


Figure 8: Wage rate index (WRI) for May 2013-2015. Source: Nepal Rastra Bank

[4] Domestic pulse production meets less than 40 percent of domestic demand, so Nepal largely depends on India to meet the domestic requirements for pulses (Shrestha et al., 'Status and Future Prospects of Pulses in Nepal' National Agriculture Research Council, 2011).

2014/15 cereal trade overview

According to the Trade and Export Promotion Centre (TEPC), the value of foreign trade during the first eight months of the fiscal year 2071/72 (July – March, 2014/15) stood at 561.9 billion NPR, an increase of 6.7 percent compared to the same period last year (2070/71). The share of exports and imports stood at 10.1 percent (56.92 billion NPR) and 89.9 percent (504.98 billion NPR) respectively. During this eight-month period, the share of cereals in total imports was 4.45 percent (22.5 billion NPR), which over the same period last year was 3.57 percent (16.88 billion NPR)[5]. **Figure 9** compares the import of key food commodities (rice, wheat, maize, buckwheat, millet and lentils) during the first ten months of the fiscal year 2013/14 and 2014/15 (i.e. July 2013 – May 2014 and July 2014 – May 2015)[6].

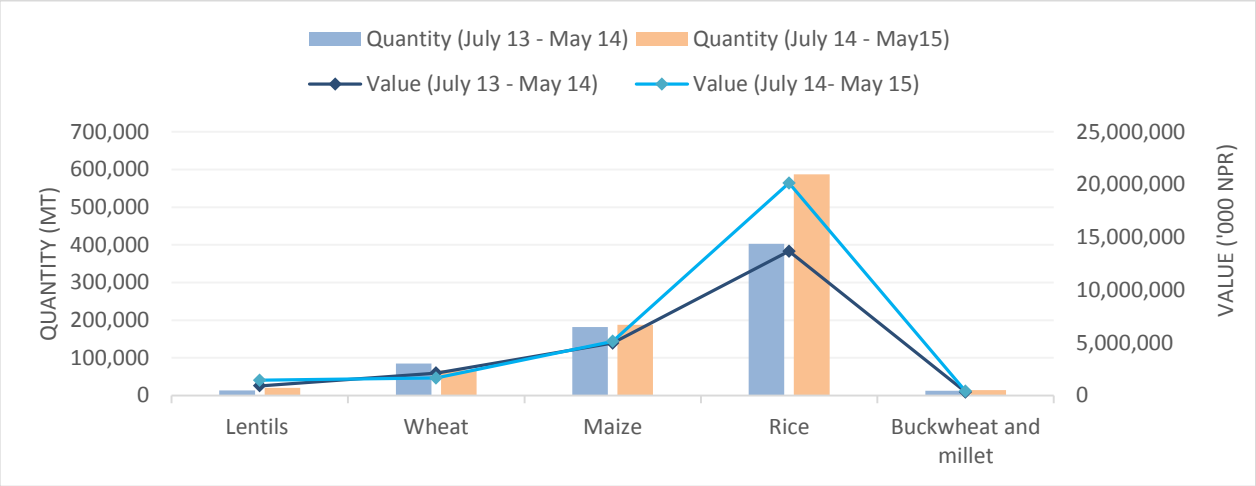


Figure 9: Import volume and value of food commodities, July 13 – May 14 and July 14 – May 15. Source: TEPC

According to the latest figures, rice was the largest imported cereal by quantity (587,218 mt) and value (20.148 billion NPR). During the period of July 2014 – May 2015, the quantity of rice imports increased by 45 percent and the value increased by 47 percent compared to the same period in 2013-2014. Maize was the second largest imported cereal by quantity (187,459 mt) and value (5.132 billion NPR). During the period of July 2014 – May 2015, the quantity of maize imports increased by 3.3 percent and the value increased by 3.2 percent compared to the same period in 2013-2014.

During the first ten months of 2014/15, lentils were the largest exported food commodity by quantity (8,700 mt) and value (NPR 1,079 million); 652 mt of buckwheat and millet was also exported, valued at 14.82 million NPR.

Global and regional production overview

FAO's latest forecast for global cereal production in 2015 is 2,524 million mt (including rice in milled terms), which is roughly 1 percent (25.6 million mt) lower than that recorded in 2014. Similarly, the global wheat production forecast is 723 million mt, which is almost 0.8 percent (6 million mt) lower than the previous year's record. This contraction in world wheat production can be attributed to the declines in the wheat harvest in the European Union, India and the Russian Federation, which combined account for approximately 40 percent of the global wheat output. In contrast, the global coarse grains production in

[5] http://www.tepc.gov.np/news-events/details.php?id=23
[6] Based on the provisional data from TEPC, which is yet to be published officially.

2015 has increased significantly, by 10 million mt, to 1,300 million mt, mainly on improved prospects for maize (in China and Mexico) and sorghum (in the United States). The preliminary estimate of the global rice production of 500 million mt is an increase of 1.3 percent compared to last year, buoyed by growth in Asia.

In India, the *rabi* (winter) wheat crop harvest started in March. The third advance estimate of major crops in India[7] for the 2014-15 season forecasts the 2015 wheat production at 90.8 million mt, 5 million mt less than the record production in the 2013-14 season. This decrease can be partially explained by the unseasonal rain and hailstorms in February-March 2015, which had a negative impact on the production of winter wheat. This, coupled with the erratic and untimely nature of the monsoon this year, has resulted in a lower overall food grain production, estimated at 251 million mt (including pulses) in 2014-15, a decline of almost 14 million mt compared to the previous year.

2014/15 total cereal production and national food availability

MoAD estimates the total cereal production (summer and winter) for 2014/15 at 9.26 million mt, a decrease of 3.1 percent compared to last year (2013/14). However, after the deduction of losses and other usage (e.g., for seed and feed), the quantity of cereals available for human consumption is estimated at 5.5 million mt. With the national cereal requirement of 5.35 million mt, Nepal has a national cereal surplus of 0.15 million mt. The production surplus for this year continues the past four-year trend of maintaining an edible cereal surplus above the national requirement. **Figure 10** shows the total edible production, requirement and balance of cereals for the past 10 years. The latest figure shows that the edible cereal surplus has declined compared to 2013/14.

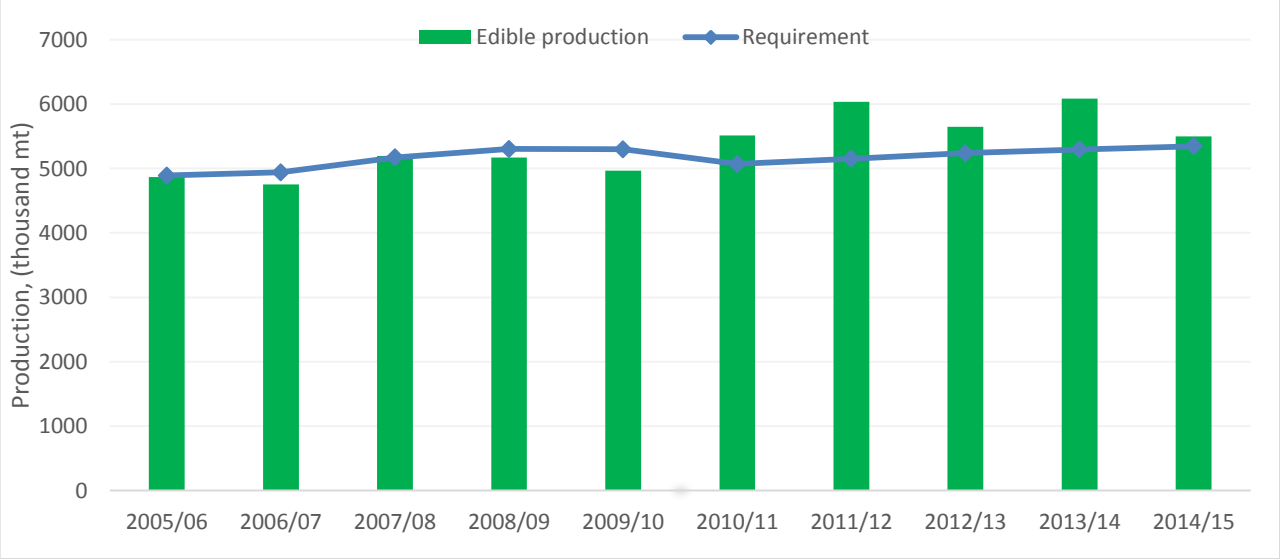


Figure 10: Total edible cereal production and requirement. Source MoAD

Despite the positive aggregate national cereal balance in recent years, traditionally, domestic production has not been enough to meet the rice demand. This can be attributed to the nationwide preference for rice consumption in Nepal. Hence, as shown in the **Table 2**, a supply gap of 873,600 mt of rice is anticipated this year. There is also a supply gap of 27,045 mt of millet.

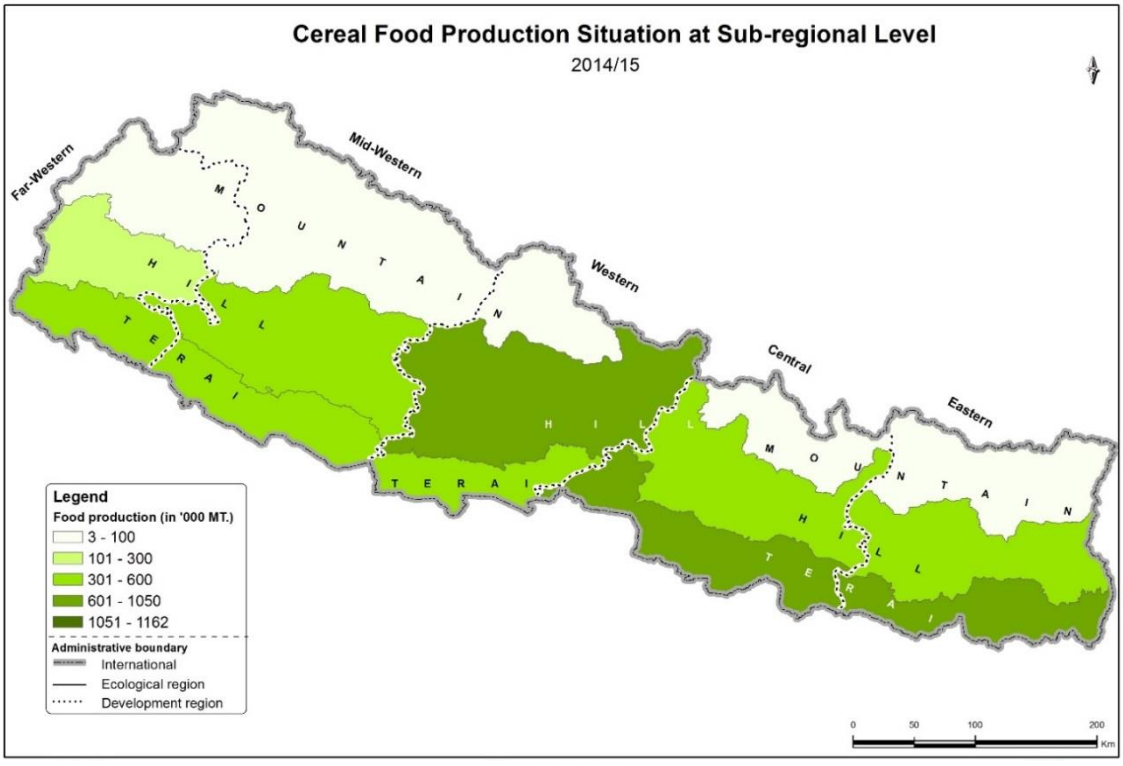
[7] http://pib.nic.in/newsite/PrintRelease.aspx?relid=121710

Food Items	Population	Actual Consumption (kg/person/year)	Requirement (mt)	Availability (mt)	Gap/Surplus (mt)
Rice	28,104,289	122	3,428,723	2,555,123	-873,600
Maize	28,104,289	41.55	1,167,733	1,251,563	83,830
Wheat	28,104,289	17	477,773	1,449,145	971,372
Millet	28,104,289	9	252,939	225,894	-27,045
Barley	28,104,289	0.37	10,399	10,107	-292
Buckwheat	28,104,289	0.29	8,150	8,897	747
Total	28,104,289	190.21	5,345,717	5,500,729	155,012

Table 2: Crop-wise actual consumption, requirement, availability and gap/surplus. Source: MoAD

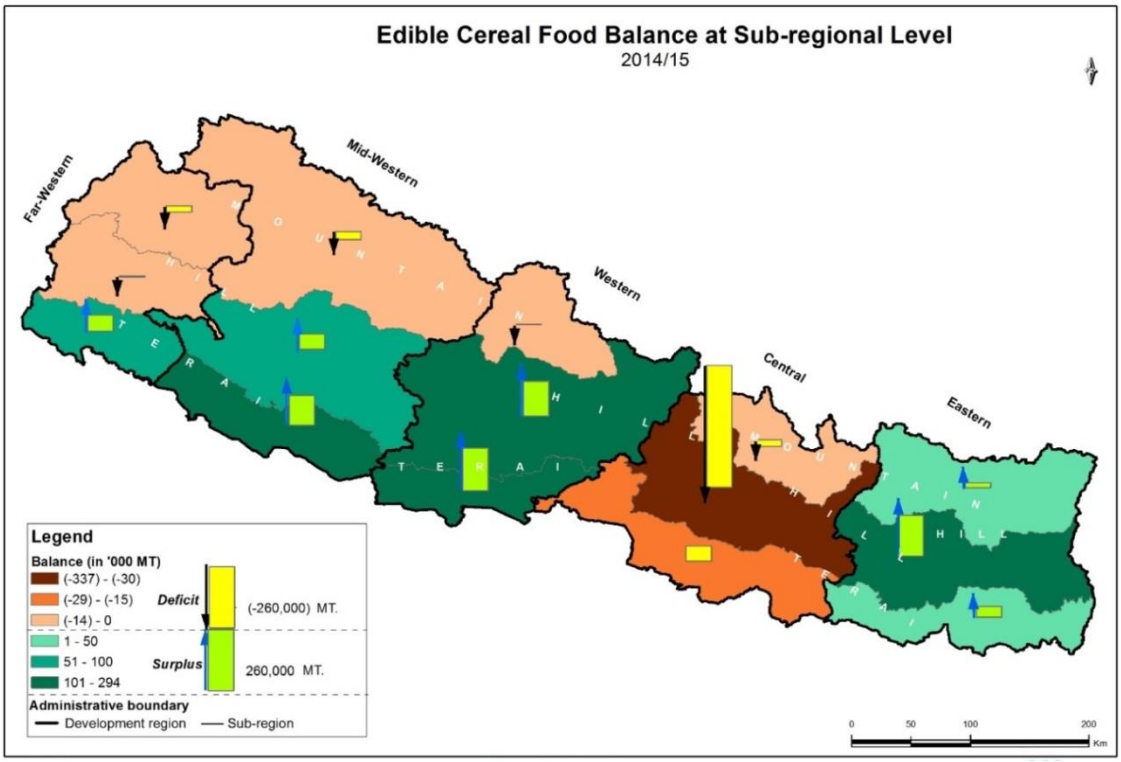
The district-wise cereal production, total edible cereal food production, requirement and balance are presented in **Annex A**.

Despite a national surplus, sub-national disparities in food self-sufficiency levels do exist in Nepal. When analyzed by ecological belt the Terai has produced enough to meet the requirements of the population there, but in the hills and mountains there is a cereal deficit of 68,691 and 138,383 mt respectively. **Map 6** shows the edible cereal production at the sub-regional level. As in 2013/14, the central Terai sub-region has the highest edible cereal production of 850,572 mt, followed by the eastern Terai, the western hills and the western Terai. The far-western, mid-western and the western mountain sub-regions had the lowest edible cereal production, with the latter producing the least.



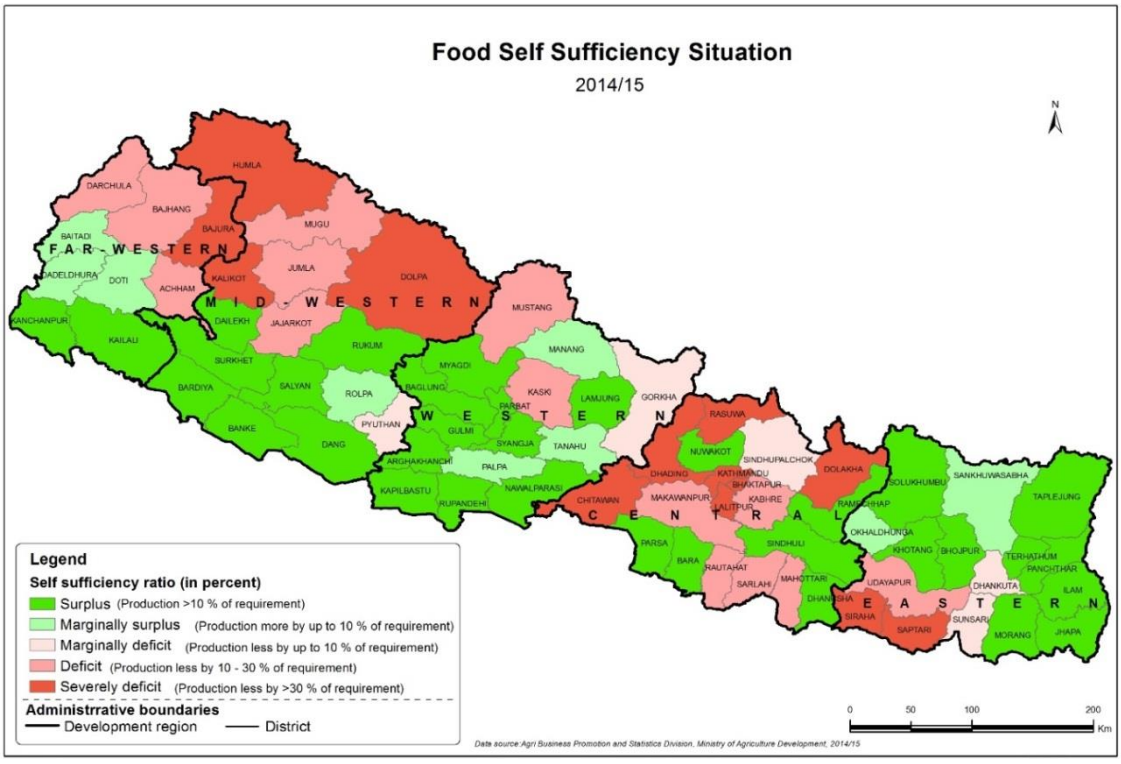
Map 6: Edible cereal production situation at sub-regional level, 2014/15

Map 7 presents the edible cereal balance at the sub-regional level**.** The central hill and central Terai sub-regions have the highest edible cereal deficit. The western Terai, eastern hill and western hill sub-regions have the highest edible cereal surplus of 182,443 mt, 173,755 mt and 148,770 mt, respectively.



Map 7: Edible cereal balance at sub-regional level, 2014/15

Map 8 presents the degree of food self-sufficiency at the district level. Production is inadequate to meet the local requirements in 32 districts. The central development region has the highest number of food deficit districts (13); this region has a total food deficit of 616,270 mt, with the highest deficit of 375,749 mt in Kathmandu district. Jhapa, Kapilvastu and Bardiya have the largest cereal food surplus, with their edible cereal surplus recorded at 113,806 mt, 87,962 mt and 87,801 mt respectively.



Map 8: District-wise food self-sufficiency at district level, 2014/15

Conclusion and winter crop outlook

MoAD estimated the production of 2014/15 winter crops (wheat and barley) at 2.0 million mt, an increase of 10.86 percent compared to the preceding five-year average and an increase of 4.95 percent compared to 2013/14. The share of wheat in total winter cereal production for this season is 98 percent. As in the 2013/14 season, the central region has the largest share of wheat production (32.6 percent), with 644,063 mt of wheat produced. Dhanusha, Rupandehi, Kapilvastu, Bara and Kailali are the top five wheat-producing districts in 2014/15. Above-normal rainfall was reported during the growing season and is believed to have provided the optimum moisture requirement for the winter wheat crop.

The total edible cereal production for 2014/15 is estimated at 5.5 million mt against the national requirement of 5.35 million mt. Hence, Nepal recorded a national level surplus of 0.15 million mt this year. However, despite the national aggregate surplus, disaggregation at the sub-regional level shows that 32 districts (4 in the far-western development region, 7 in the mid-western development region, 3 in the western development region, 13 in the central development region and 5 in the eastern development region) are not able to meet the edible cereal requirement at the district level through local production.

Validation of CRAFT 2015 winter crop outlook

The CGIAR Research Programme on Climate Change, Agriculture and Food Security (CCAFS) Regional Agriculture Forecasting Toolbox (CRAFT) forecasted the wheat production for the 2014/15 winter season at 1,994,598 mt. MoAD's wheat production estimate was 1,975,607 mt. Based on the results of the CRAFT model, the forecasted and estimated outlook are similar and thus provides sufficient ground for the model's validation. The results are shown below in **Figure 11**.

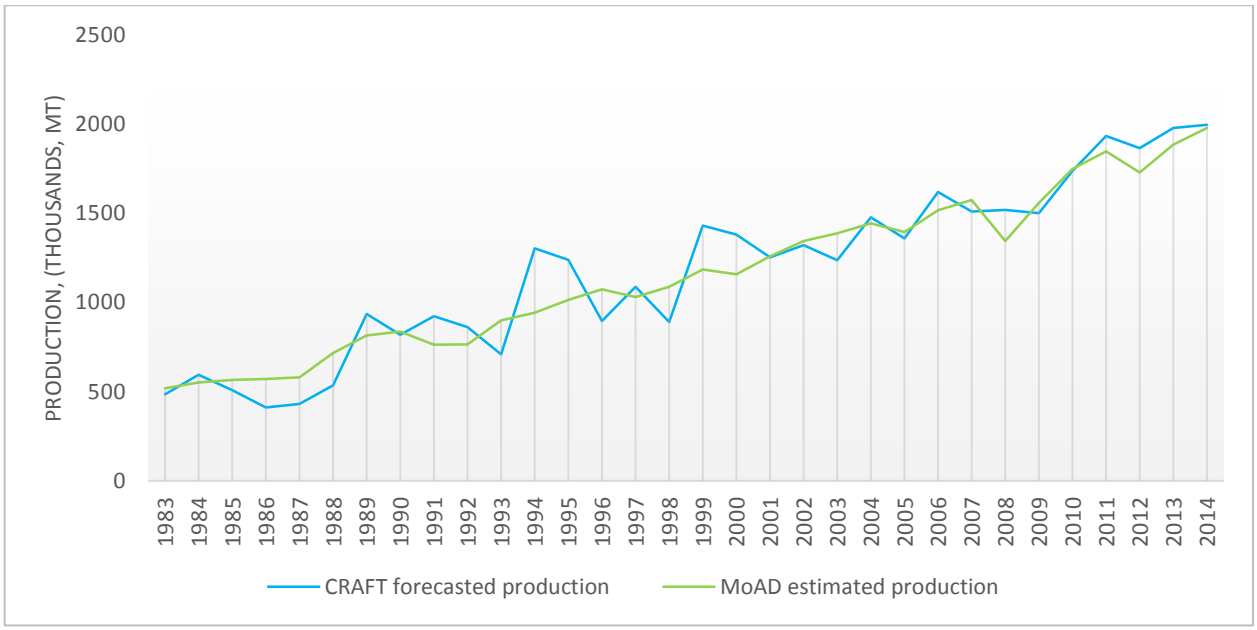


Figure 11: CRAFT model results for wheat production, 2014/15 winter season

Annex A: Area, production and yield of 2014/15 winter crops and cereal balance at the national, sub-regional and district level

DISTRICT	WHEAT			BARLEY			Mid	Edible Cereal						Total Edible	Total Cereal	Balance*
	Area	Prod	Yield	Area	Prod	Yield	Population	Rice	Maize	Millet	Buckwheat	Wheat	Barley	Production	Requirement	
TAPLEJUNG	1,060	2,271	2,142	240	312	1,300	124,687	4,410	23,456	3,887	136	1,842	87	33,817	23,815	10,002
SANKHUWASABHA	805	1,610	2,000	30	30	1,000	158,552	16,731	8,488	6,156	15	1,301	8	32,698	30,283	2,415
SOLUKHUMBU	1,750	3,550	2,029	180	190	1,056	105,168	1,567	21,654	2,021	155	2,464	45	27,904	20,087	7,817
E.MOUNTAIN	***3,615***	***7,431***	***2,056***	***450***	***532***	***1,182***	***388,408***	***22,707***	***53,598***	***12,063***	***305***	***5,607***	***140***	***94,419***	***74,185***	***20,234***
PANCHTHAR	3,912	6,494	1,660	400	450	1,125	187,868	11,046	21,661	7,428	29	5,183	124	45,471	37,762	7,709
ILAM	4,620	15,338	3,320	50	50	1,000	293,288	17,098	91,216	1,391	16	12,680	14	122,416	58,951	63,465
TERHATHUM	2,500	5,500	2,200	75	80	1,067	97,282	9,559	22,724	2,435	23	4,467	22	39,230	19,554	19,676
DHANKUTA	1,390	2,900	2,086	5	5	1,000	162,175	12,325	10,322	6,178	-	2,348	1	31,174	32,597	(1,423)
BHOJPUR	2,500	4,800	1,920	10	10	1,000	174,815	16,825	58,257	3,275	20	3,321	2	81,700	35,138	46,562
KHOTANG	5,530	11,460	2,072	450	500	1,111	197,037	12,536	51,301	17,581	281	7,965	118	89,782	39,604	50,178
OKHALDHUNGA	2,365	4,494	1,900	100	100	1,000	144,648	4,271	15,547	8,406	73	2,742	21	31,060	29,074	1,986
UDAYAPUR	5,126	12,456	2,430	35	35	1,000	330,359	26,498	13,373	1,943	14	10,167	10	52,004	66,402	(14,398)
E.HILLS	***27,943***	***63,442***	***2,270***	***1,125***	***1,230***	***1,093***	***1,587,472***	***110,158***	***284,401***	***48,637***	***456***	***48,874***	***312***	***492,837***	***319,082***	***173,755***
JHAPA	8,050	24,150	3,000	6	6	1,000	868,442	189,723	58,583	1,755	1,039	19,892	2	270,994	157,188	113,806
MORANG	16,100	42,000	2,609	-	-	-	1,018,933	161,880	20,504	1,362	57	34,395	-	218,199	184,427	33,772
SUNSARI	16,000	47,600	2,975	-	-	-	826,745	90,690	4,994	585	327	39,194	-	135,790	149,641	(13,851)
SAPTARI	15,000	40,000	2,667	-	-	-	669,110	52,953	-	214	-	25,437	-	78,604	121,109	(42,505)
SIRAHA	15,715	37,500	2,386	-	-	-	665,198	53,089	-	524	-	21,319	-	74,933	120,401	(45,468)
E.TERAI	***70,865***	***191,250***	***2,699***	***6***	***6***	***1,000***	***4,048,428***	***548,335***	***84,081***	***4,440***	***1,424***	***140,238***	***2***	***778,519***	***732,766***	***45,753***
E.REGION	102,423	262,123	2,559	1,581	1,768	1,118	6,024,307	681,200	422,080	65,140	2,185	194,718	453	1,365,776	1,126,033	239,743
DOLAKHA	4,700	7,050	1,500	170	175	1,029	179,888	2,348	3,989	2,439	327	3,666	29	12,798	34,359	(21,561)
SINDHUPALCHOK	7,008	7,819	1,116	205	205	1,000	280,861	9,482	25,893	12,766	-	3,954	34	52,128	53,644	(1,516)
RASUWA	735	1,507	2,050	285	356	1,249	42,732	1,184	1,289	516	-	800	59	3,849	8,162	(4,313)
C.MOUNTAIN	***12,443***	***16,376***	***1,316***	***660***	***736***	***1,115***	***503,481***	***13,013***	***31,171***	***15,722***	***327***	***8,420***	***122***	***68,775***	***96,165***	*(27,390)*
RAMECHHAP	4,750	9,120	1,920	80	68	850	198,872	10,882	31,498	2,995	16	5,568	14	50,972	39,973	10,999
SINDHULI	5,681	15,310	2,695	55	90	1,636	303,023	17,353	33,835	6,134	467	9,512	19	67,320	60,908	6,412
KAVRE	9,850	23,738	2,410	700	750	1,071	380,412	15,444	30,304	2,676	547	14,673	155	63,799	76,463	(12,664)
BHAKTAPUR	3,100	11,200	3,613	45	50	1,111	343,630	11,166	3,942	104	-	7,034	10	22,257	69,070	(46,813)
LALITPUR	3,650	9,490	2,600	50	31	620	533,335	10,426	15,377	376	39	5,887	6	32,112	107,200	(75,088)
KATHMANDU	4,100	14,500	3,537	4	4	1,000	2,111,754	19,034	20,011	562	4	9,101	1	48,714	424,463	(375,749)
NUWAKOT	4,547	14,504	3,190	185	166	897	273,176	24,768	30,359	5,754	201	7,862	27	68,971	54,908	14,063
DHADING	4,790	10,298	2,150	325	350	1,077	334,993	16,875	15,893	3,767	-	5,484	58	42,078	67,334	(25,256)
MAKWANPUR	4,215	12,645	3,000	200	250	1,250	432,244	16,293	40,869	2,174	168	7,890	52	67,448	86,881	(19,433)
C.HILLS	***44,683***	***120,805***	***2,704***	***1,644***	***1,759***	***1,070***	***4,911,440***	***142,241***	***222,089***	***24,543***	***1,443***	***73,011***	***343***	***463,670***	***987,200***	*(523,530)*

DISTRICT	WHEAT			BARLEY			Mid Population	Edible Cereal						Total Edible Production	Total Cereal Requirement	Balance*
	Area	Prod	Yield	Area	Prod	Yield		Rice	Maize	Millet	Buckwheat	Wheat	Barley			
DHANUSHA	38,000	114,994	3,026	1	1	1,000	790,940	79,114	-	246	-	93,378	0	172,738	143,160	29,578
MAHOTTARI	30,000	76,500	2,550	10	10	1,000	660,021	50,582	-	-	-	56,719	3	107,304	119,464	(12,160)
SARLAHI	25,700	65,250	2,539	70	75	1,071	830,841	71,063	-	666	-	50,919	21	122,669	150,382	(27,713)
RAUTAHAT	15,500	50,375	3,250	4	5	1,250	753,199	63,376	-	43	-	35,652	1	99,073	136,329	(37,256)
BARA	29,150	90,163	3,093	80	100	1,250	747,074	87,362	-	85	-	71,843	28	159,318	135,220	24,098
PARSA	22,600	79,100	3,500	35	45	1,286	648,475	102,423	-	-	-	64,160	13	166,595	117,374	49,221
CHITWAN	8,500	30,500	3,588	30	45	1,500	629,799	49,794	-	1,159	-	28,089	11	22,875	113,994	(91,119)
C.TERAI	***169,450***	***506,882***	***21,546***	***230***	***281***	***1,222***	***5,060,349***	***503,714***	***-***	***2,199***	***-***	***344,583***	***76***	***850,572***	***915,923***	*(65,351)*
C.REGION	226,576	644,063	25,566	2,534	2,776	1,096	10,475,270	658,968	253,260	42,464	1,770	426,014	541	1,383,018	1,999,288	(616,270)
MANANG	276	625	2,264	100	200	2,000	5,609	-	143	-	459	508	56	1,166	1,071	95
MUSTANG	582	1,048	1,801	270	500	1,852	12,883	-	389	-	825	841	141	2,195	2,461	(266)
W.MOUNTAIN	***858***	***1,673***	***1,950***	***370***	***700***	***1,892***	***18,493***	***-***	***531***	***-***	***1,283***	***1,349***	***197***	***3,361***	***3,532***	*(171)*
GORKHA	3,910	7,850	2,008	108	119	1,102	264,527	12,874	21,905	9,168	324	3,844	20	48,135	53,170	(5,035)
LAMJUNG	500	1,450	2,900	28	27	964	164,074	17,550	20,994	6,385	10	1,024	6	45,970	32,979	12,991
TANAHU	1,890	3,760	1,989	6	6	1,000	326,537	21,388	41,785	4,367	153	2,607	1	70,302	65,634	4,668
KASKI	6,800	17,500	2,574	130	140	1,077	545,377	41,854	19,765	14,070	13	13,020	33	88,755	109,621	(20,866)
PARBAT	2,615	6,238	2,385	95	86	905	142,315	11,662	19,741	5,587	30	4,368	20	41,409	28,605	12,804
SYANGJA	5,600	12,174	2,174	6	7	1,167	278,589	28,488	50,976	14,522	140	8,484	2	102,612	55,996	46,616
PALPA	6,240	14,040	2,250	26	37	1,423	258,271	15,699	26,223	1,935	342	9,802	9	54,009	51,912	2,097
MYAGDI	3,062	6,736	2,200	304	395	1,299	113,323	6,863	22,620	2,873	91	5,471	110	38,027	22,778	15,249
BAGLUNG	6,996	16,975	2,426	965	1,206	1,250	268,506	9,746	46,465	17,889	100	13,855	335	88,389	53,970	34,419
GULMI	7,817	16,500	2,111	370	666	1,800	273,845	15,345	41,970	2,386	223	13,371	187	73,480	55,043	18,437
ARGHAKHANCHI	7,340	16,000	2,180	350	420	1,200	193,486	13,969	38,474	540	196	12,988	116	66,283	38,891	27,392
W.HILLS	***52,770***	***119,223***	***2,259***	***2,388***	***3,109***	***1,302***	***2,828,851***	***195,437***	***350,917***	***79,722***	***1,621***	***88,833***	***839***	***717,369***	***568,599***	***148,770***
NAWALPARASI	18,751	53,500	2,853	10	12	1,200	678,941	101,253	-	426	103	38,571	3	140,356	122,888	17,468
RUPANDEHI	30,000	99,500	3,317	100	210	2,100	960,011	176,174	-	45	-	74,497	59	250,775	173,762	77,013
KAPILVASTU	32,100	97,500	3,037	200	350	1,750	612,425	117,043	-	-	-	81,670	98	198,811	110,849	87,962
W.TERAI	***80,851***	***250,500***	***3,098***	***310***	***572***	***1,845***	***2,251,377***	***394,470***	***-***	***471***	***103***	***194,738***	***161***	***589,942***	***407,499***	***182,443***
W.REGION	134,479	371,396	2,762	3,068	4,381	1,428	5,098,721	589,906	351,448	80,193	3,007	284,921	1,197	1,310,672	979,630	331,042
DOLPA	2,600	4,470	1,719	390	450	1,154	40,028	301	-	244	555	2,864	125	4,088	7,645	(3,557)
MUGU	3,225	4,200	1,302	1,510	1,710	1,132	60,614	1,298	-	4,035	409	2,862	473	9,078	11,577	(2,499)
HUMLA	1,021	1,021	1,000	685	815	1,190	55,648	444	-	1,075	416	(116)	226	2,045	10,629	(8,584)
JUMLA	2,450	4,930	2,012	3,990	6,800	1,704	117,851	3,782	4,005	3,594	70	3,984	1,907	17,342	22,510	(5,168)
KALIKOT	5,630	6,474	1,150	1,030	2,063	2,003	151,958	3,425	3,705	1,636	148	5,003	581	14,496	29,024	(14,528)
MW.MOUNTAIN	***14,926***	***21,095***	***1,413***	***7,605***	***11,838***	***1,557***	***426,098***	***9,250***	***7,710***	***10,584***	***1,597***	***14,597***	***3,312***	***47,050***	***81,385***	*(34,335)*

DISTRICT	WHEAT			BARLEY			Mid Population	Edible Cereal						Total Edible Production	Total Cereal Requirement	Balance*
	Area	Prod	Yield	Area	Prod	Yield		Rice	Maize	Millet	Buckwheat	Wheat	Barley			
RUKUM	11,800	28,000	2,373	900	1,100	1,222	217,166	5,376	25,249	1,323	-	22,829	305	55,082	43,650	11,432
ROLPA	8,570	22,710	2,650	605	670	1,107	230,604	6,720	19,946	1,085	100	18,611	185	46,647	46,351	296
PYUTHAN	8,650	20,500	2,370	510	800	1,569	234,673	12,070	14,508	1,880	12	16,713	224	45,407	47,169	(1,762)
SALYAN	15,565	36,210	2,326	1,270	1,475	1,161	255,078	13,760	29,941	1,913	57	29,493	409	75,572	51,271	24,301
JAJARKOT	13,040	15,500	1,189	700	1,000	1,429	188,489	5,930	9,859	1,887	24	12,019	279	29,998	37,886	(7,888)
DAILEKH	20,150	39,192	1,945	200	250	1,250	277,957	14,400	29,354	2,169	16	31,608	69	77,617	55,869	21,748
SURKHET	16,000	44,000	2,750	1,030	1,500	1,456	379,262	27,820	28,914	2,430	-	36,115	419	95,698	76,232	19,466
MW.HILLS	***93,775***	***206,112***	***2,198***	***5,215***	***6,795***	***1,303***	***1,783,229***	***86,076***	***157,772***	***12,686***	***209***	***167,388***	***1,890***	***426,020***	***358,428***	***67,592***
DANG	12,022	32,500	2,703	25	30	1,200	593,361	88,246	20,557	16	16	26,657	8	135,501	107,398	28,103
BANKE	19,030	57,500	3,022	10	10	1,000	541,250	57,246	6,557	-	-	47,375	3	111,180	97,966	13,214
BARDIYA	19,400	75,500	3,892	10	10	1,000	445,586	115,209	-	-	-	53,240	3	168,452	80,651	87,801
MW.TERAI	***50,452***	***165,500***	***3,280***	***45***	***50***	***1,111***	***1,580,198***	***260,701***	***27,114***	***16***	***16***	***127,271***	***14***	***415,133***	***286,015***	***129,118***
MW.REGION	159,153	392,707	2,467	12,865	18,683	1,452	3,789,525	356,027	192,596	23,286	1,823	309,255	5,216	888,203	725,828	162,375
BAJURA	4,750	7,230	1,522	1,010	1,100	1,089	147,028	4,096	-	2,253	10	5,035	304	11,697	28,082	(16,385)
BAJHANG	9,950	23,500	2,362	3,500	3,500	1,000	207,725	11,744	1,005	1,883	6	19,155	963	34,756	39,675	(4,919)
DARCHULA	4,450	12,300	2,764	1,190	1,850	1,555	138,049	5,445	3,572	942	67	10,098	518	20,642	26,367	(5,725)
FW.MOUNTAIN	***19,150***	***43,030***	***2,247***	***5,700***	***6,450***	***1,132***	***492,802***	***21,285***	***4,577***	***5,078***	***82***	***34,288***	***1,785***	***67,095***	***94,124***	*(27,029)*
ACHHAM	15,210	22,500	1,479	500	660	1,320	268,736	18,965	4,966	2,908	-	17,800	184	44,823	54,016	(9,193)
DOTI	15,940	32,500	2,039	200	300	1,500	213,618	12,208	641	5,345	10	26,284	84	44,572	42,937	1,635
BAITADI	15,000	32,790	2,186	1,000	1,650	1,650	257,816	8,562	15,671	916	-	26,622	462	52,232	51,821	411
DADELDHURA	8,705	18,500	2,125	190	250	1,316	149,021	10,486	6,323	254	-	14,997	70	32,130	29,953	2,177
FW.HILLS	***54,855***	***106,290***	***1,938***	***1,890***	***2,860***	***1,513***	***889,191***	***50,221***	***27,601***	***9,422***	***10***	***85,703***	***799***	***173,757***	***178,727***	*(4,970)*
KAILALI	34,300	80,500	2,347	400	410	1,025	850,120	117,159	-	311	20	58,707	113	176,310	153,872	22,438
KANCHANPUR	31,433	75,500	2,402	10	10	1,000	484,355	80,357	-	-	-	55,538	3	135,898	87,668	48,230
FW.TERAI	***65,733***	***156,000***	***2,373***	***410***	***420***	***1,024***	***1,334,474***	***197,515***	***-***	***311***	***20***	***114,245***	***116***	***312,208***	***241,540***	***70,668***
FW.REGION	139,738	305,320	2,185	8,000	9,730	1,216	2,716,467	269,021	32,178	14,811	113	234,236	2,700	553,059	514,391	38,668
Nepal	762,367	1,975,607	2,591	28,047	37,352	1,332	28,104,289	2,555,123	1,251,563	225,894	8,897	1,449,145	10,107	5,500,728	5,345,170	155,558

*The balance indicates the degree of food sufficiency, or the ability of a given district to meet local cereal consumption demands based on their own production. It is a basic measure of the gap between local demand and local production and hence does not take into the account the amount of food available through trade and other means. To calculate food sufficiency, net food availability is calculated by applying extraction rates to the gross food amount (food available after deducting feed, seed, wastage and other uses); then the food requirement is estimated by multiplying the population with per capita food consumption (201 kg in the mountains, 191 kg in the hills and 181 kg in the Terai). The difference of the net food availability and requirement gives the food sufficiency status. Districts are categorized as food deficit if the local cereal production is not sufficient to meet the local consumption demands. Data in the Balance column in red in the table above indicates a food deficit.

Annex B: Summary of the winter crop assessment mission, April 2015

No.	Summary	Eastern	Central	Western	Mid-Western	Far-Western
1	Districts visited	Terhathum, Dhankuta, Saptari	Parsa, Nuwakot, Rasuwa	Rupandehi, Lamjung, Manang	Banke, Dailekh, Jumla	Kanchanpur, Doti, Bajura
2	Summer Crop Situation					
	Water Availability	Not adequate	Adequate, (not sufficient for maize)	Not adequate during planting	Adequate	Adequate
	Planting Dates	Late	Normal	Late	Normal	Normal
	Harvest Dates	Late	Normal	Late	Normal	Normal
	Rainfall	Adequate during later stages	Normal / adequate	Inadequate during planting; excessive during maturity	Adequate	Adequate
	Temperature	Normal	Normal	Normal	Normal	Low
	Overall production	Stable	Increasing	Decreased in Terai, elsewhere stable	Increasing	Stable
	Major Rice Varieties	Sona Mansuli, Radha 9/12, Pokhreli Masina, Dangre Masina, Raga, Faudel, Atti, Belguthe Masina, Chirate, Pathivara	Sona Masuli, Hardinath-1, PSC Hybrid, Khumal-4, Khumal-11, Khumal-10	Sawa Mansuli, Gorakhnath, Sabitri, Loktantra, Sabitri, Radha-4, Biji	Radha-4, Shankar, Radha -9, IRR-8, Palte, HimaliTud, Kalo Marshi, Chhanna-1 and 3	Sarju-52, Radha-4, DY 69, Jaya, Hardinath, Khumal -4, Thapachini, Deharadun
3	Winter Crop Situation					
	Water Availability	Late	Adequate	Excessive for wheat	Excessive	Adequate
	Planting Dates	Not adequate	Normal	Late	Normal	Normal
	Harvest Dates	Late	Late	Late	Late	Normal
	Rainfall	Not adequate	Normal / adequate	Adequate during growing; excessive during the harvesting with widespread hailstones in Rupandehi	Excess during harvest	Adequate
	Temperature	Normal	Normal	Low	Low	Normal
	Overall production	Stable to increasing	Increasing	Decreased in Rupandehi, elsewhere stable	Decreasing	Stable
	Major Wheat Varieties	NL-297, Gautam, Bhrikuti, Annapurna 1, RR21, WK-1204	WK-1204, Gaura, Gautam, NL-971, Bhrikuti, NL-297	Bijaya, NL-297, Bhrikuti, Gautam, Annapurna	Gautam, Bijaya, NL-297, WK1204, Annapurna, Pasanga Lhamu, Rato jhuse, Sano Sete, Simle	PBW 343, Bhrikuti, NL 297, BL 1022, Gaugali Local (Mudule), WK 1204, Gautam

No.	Summary	Eastern	Central	Western	Mid-Western	Far-Western
4	Input Supply					
	Fertilizer	Easy access	Easy access	Easy access	Easy access	Easy access
	Improved seeds	Easy access	Easy access	Easy access	Easy access	Easy access
	Draft power	Oxen in hills, some tractors and combines in Terai	Oxen in hills, some tractors and combines in Terai	Oxen in hills, power tillers, some tractors and combines in Terai	Oxen in hills, power tillers, some tractors and combines in Terai	Oxen in hills, power tillers, some tractors and combines in Terai
	Labor	Available through mutual help	Available through mutual help	Available through mutual help	Available through mutual help	Available through mutual help
	Farm Credit	Available through micro-credits	Available through micro-credits	Available through micro-credits	Available through micro-credits	Available through micro-credits
5	Farm gate price (NPR /kg)					
	Rice	20 - 24 NPR	20 - 28 NPR	20 - 22 NPR (excluding Manang)	17 -20 NPR	18 - 28 NPR
	Wheat	20 – 35 NPR	20 – 24 NPR	20-22 NPR; 50 NPR in Manang	22 – 25 NPR	22 – 25 NPR
	Maize	19 – 22 NPR	20-25 NPR	NPR 50 in Manang	-	25 - 30 NPR
	Potato	8 – 35 NPR	18-20 NPR	NPR 20-22; 43-50 NPR in Manang	25 – 40 NPR	15 - 40 NPR
6	Area specific problems and constraints	Lack of irrigation; lack of mechanization in hills and mountains	Lack of irrigation; Lack of mechanization	Lack of proper market facility and management; Lack of irrigation; lack of mechanization in hills and mountains	Lack of proper market facility and management; Lack of irrigation; lack of mechanization in hills and mountains	Lack of irrigation; lack of mechanization in hills and mountains; Landslides and floods

Annex C: Case study

Case study from Rupandehi district:

Manpakadi VDC in Rupandehi district has a mixed population of different ethnic groups and castes, including Tharu, Hill Brahmin/Chhetri, and Terai Dalit. More than 80 percent of households are directly engaged in agriculture, with other opting for overseas work and casual labor; about 15 percent of households are landless. Farmers, who are engaged in agricultural activities, have a strong enthusiasm and willingness to use farm mechanization with recent advances in irrigation systems and soil suitability testing, so that they can cultivate suitable crops. Paddy and wheat are the major cereal crops, and vegetable and lentil are other important cash crops in this VDC. Paddy and wheat contribute 9 and 3 months, respectively, of food self-sufficiency for households. Likewise, it is estimated that paddy alone contributes approximately 20 percent of average household income.

Winter production, especially of wheat, suffered a large loss this year. Excess residual moisture caused a subsequent delay in wheat sowing, whereas frequent rain and hailstorms during the harvest period had a major effect on the standing wheat crops; as a result, the production loss is estimated to be more than 50 percent compared to last year. Another major winter crop, mustard, was also significantly affected, with an estimated production loss of almost 25 percent. Frequent winter rain favored pest growth which also hindered mustard production. The notable losses (50 to 75 percent) for wheat and mustard occurred in Tilottama, Gangolia and Makraha VDCs in Rupandehi due to hailstones during the harvesting stage.

One of the main sources of income is remittances from Qatar, Saudi Arabia, and Malaysia; at least one member from 50 to 60 percent of households in this VDC has gone to these countries for work. On average, they send NPR 15,000/person/month back home. Casual labor in brick factories and construction work is another source of income.

During the interaction with the assessment mission, farmers and the members of the cooperative "*Asal Krishak Bahu Udeshiya Sahakari*" mentioned the following major problems and constraints in agricultural production and marketing:

- Lack of market facility and management (linkage),
- Small scale production and scattered farmers,
- Middle men (*bichauliya*) plays a major role in the marketing and price of the agri-products and they benefit more,
- There is no practice of fixing a minimum price of agri-products by the Government, and
- Improved variety seeds are not available in a timely manner.

Annex D: Crop cut results

Location	Coordinates		Variety (Wheat)	Yield (Mt /ha)			Average Yield (Mt /ha)	Moisture Content
	Lat.	Long.		Sample Plot #1	Sample Plot #2	Sample Plot #3		
EASTERN DEVELOPMENT REGION								
District: Saptari VDC/NP: Haripur Ward: 7 Chakdah	26.680	86.517	Gautam	-	-	-	1.8	With moisture but very much ripened
District: Saptari VDC/NP: Bhardah Ward: 1 Kankalnitole	26.546	86.878	NL-297	-	-	-	2.71	Moisture reduced
District: Dhankuta VDC/NP: Dhankuta Ward: 13 Pokharetole	26.969	87.318	Gautam	-	-	-	3.75	With moisture
District: Dhankuta VDC/NP: Hattikharka Ward: 3 Salleri	27.077	87.317	Gautam	-	-	-	7	With moisture
CENTRAL DEVELOPMENT REGION								
District: Rasuwa VDC / NP: Syafru Ward: 4 Sano Bharku	28.137	85.319	RR-21	-	-	-	Not ready for harvest	-
District: Rasuwa VDC / NP: Dhaibung Ward: 5 Karkichhap	27.992	85.204	Gaura (Improved)	6.6	5.8	5.1	5.833	18% (Reduced by sun drying)
District: Nuwakot VDC / NP: Thanapati Ward: 8 Torichaur	27.855	85.293	WK-1204	4.3	6.1	6.1	5.5	27%
District: Nuwakot VDC / NP: Sunakhani Ward: 9 Jhingarthok	27.856	85.310	Gautam (Hybrid)	6	6.6	6	6.2	25%
District: Parsa VDC / NP: Birgunj (Alau) Ward: 20 Mansitole	27.033	84.840	NL-971	1.81	2.2	2.7	2.237	22%
District: Parsa VDC / NP: Pokhariya Ward: 14 Govindpur	27.050	84.772	Bijaya	4.25	4.0	4.25	4.16	19%

Location	Coordinates		Variety (Wheat)	Yield (Mt /ha)			Average Yield (Mt /ha)	Moisture Content
	Lat.	Long.		Sample Plot #1	Sample Plot #2	Sample Plot #3		
WESTERN DEVELOPMENT REGION								
District: Rupandehi VDC / NP: Manpakadi Ward: 3 Rajad	27.654	83.381	NL 971	2.7	2.4	1.9	2.33	
District: Lamjung VDC / NP: Banjhkhet Ward: 8 Bhangale	28.233	84.381	Gautam	2.29	0.973	0.688	1.317	
District: Manang VDC / NP: Chame Ward: 4 Thanchowk	28.549	84.288	Local (Mudula)	Wheat crop was in growing condition (DADO Planning Officer and NeKSAP DC to cut the crop in June)			Harvest in June	
MID-WESTERN DEVELOPMENT REGION								
District: Banke VDC / NP: Bankatawa Ward: 9 Lalpur Rampurtole	-	-	Local	-	-	-	2.4	
District: Dailekh VDC / NP: Kushapani Ward: 4 Khambagade	-	-	Annapurna - 3	-	-	-	2.24	
FAR-WESTERN DEVELOPMENT REGION								
District: Kanchanpur VDC / NP: Daijee Ward: 9 Daijee	28.931	80.267	PBW 343	2.05	3.25	3.05	2.78	Dry weight
District: Doti VDC / NP: Silgadi NP Ward: n/a Thaple	29.264	80.988	Gautam	7.5	4.5	5	5.66	With moisture
District: Bajura VDC / NP: Martadi Ward: 4 RapkNagane	29.439	81.456	WK 1204	4.38	4.85	5.2	4.81	With moisture
District: Bajura VDC / NP: Martadi Ward: 4 RapkNagane	29.438	81.454	Local	2.62	2.12	2.62	2.45	Low moisture