

First Advance Estimate of 2018 Paddy Production in Nepal using the CCAFS Regional Agricultural Forecasting Toolbox (CRAFT)

19 November 2018

The first advance estimate of 2018 paddy production was obtained on 19th November, 2018 using CRAFT, the CCAFS Regional Agricultural Forecasting Toolbox (see Methods on page 2). According to CRAFT, the total paddy production in 2018 is forecasted to be 5,482,634.12 MT, a 6.42 percent increase compared to the production level of 5,151,925 MT in 2017. The expected yield of paddy in the country is expected to be 3.8 MT per hectare. Furthermore, the forecasted figure is a 11.81 percent increase compared to the average production level of the last five years. The forecast was made based on the Ministry of Agriculture and Livestock Development (MoALD)'s records of paddy planted area received on 15th November 2018 (1,446,986 hectares) and is based on a prediction uncertainty of ± 7.5 percent. See **Figure 1** for MoALD's data on paddy planted area (2013-2018) and paddy production (2013-2017) and the CRAFT paddy production forecast for 2018.

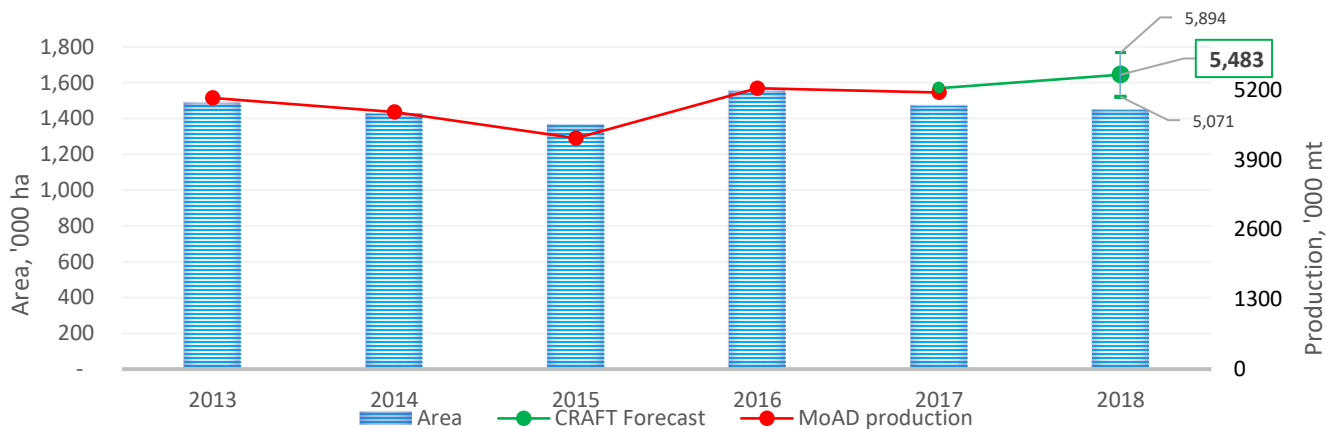


Figure 1: Paddy area, paddy production and CRAFT paddy production forecast for Nepal, 2013-2018 (Source: MoALD; CRAFT)

The increase in paddy production this season is mainly attributed to timely and adequate monsoon rainfall as well as its even distribution during the growing season. The Government of Nepal's Department of Hydrology and Meteorology (DHM) reported that the onset of monsoon in Nepal was on June 8, which was very good, thereby aiding the production. The DHM's records also show that the rainfall before the monsoon onset this year was good with above normal rainfall in April and May providing adequate soil moisture for rice growth. The rainfall was slightly below average in June and July as compared to the 30 years' average value but was compensated for by higher than normal rainfall in August, providing a good top-dressing which is crucial for good production. Further, no significant crop losses or floods were reported, thereby helping high production. Please refer to Figure 2 for province wise forecast of paddy and its comparison to last year's productions.



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| Province | Area 2017 | Area 2018 | Percent change in area | Production 2017 | Craft forecast 2018 | Percent change in production |
|---------------|-----------|-----------|------------------------|-----------------|---------------------|------------------------------|
| Gandaki | 115,308 | 106,282 | -8 | 417,928 | 376,855 | -10 |
| Karnali | 38,248 | 32,137 | -16 | 131,746 | 130,142 | -3 |
| Province 1 | 322,183 | 327,178 | 2 | 1,108,606 | 1,295,542 | 19 |
| Province 2 | 382,137 | 399,457 | 5 | 1,285,843 | 1,530,291 | 19 |
| Province 3 | 133,661 | 123,299 | -8 | 503,238 | 538,216 | 13 |
| Province 5 | 310,880 | 298,064 | -4 | 1,120,131 | 1,078,819 | -4 |
| Sudur Paschim | 167,129 | 160,570 | -4 | 584,433 | 532,769 | -16 |

Table 1: The table shows provincial percent change of planted area from 2017 to 2018 (in hectares) as well as paddy production from 2017 and CRAFT forecast for 2018 (in MT), (Source: MoALD; CRAFT)

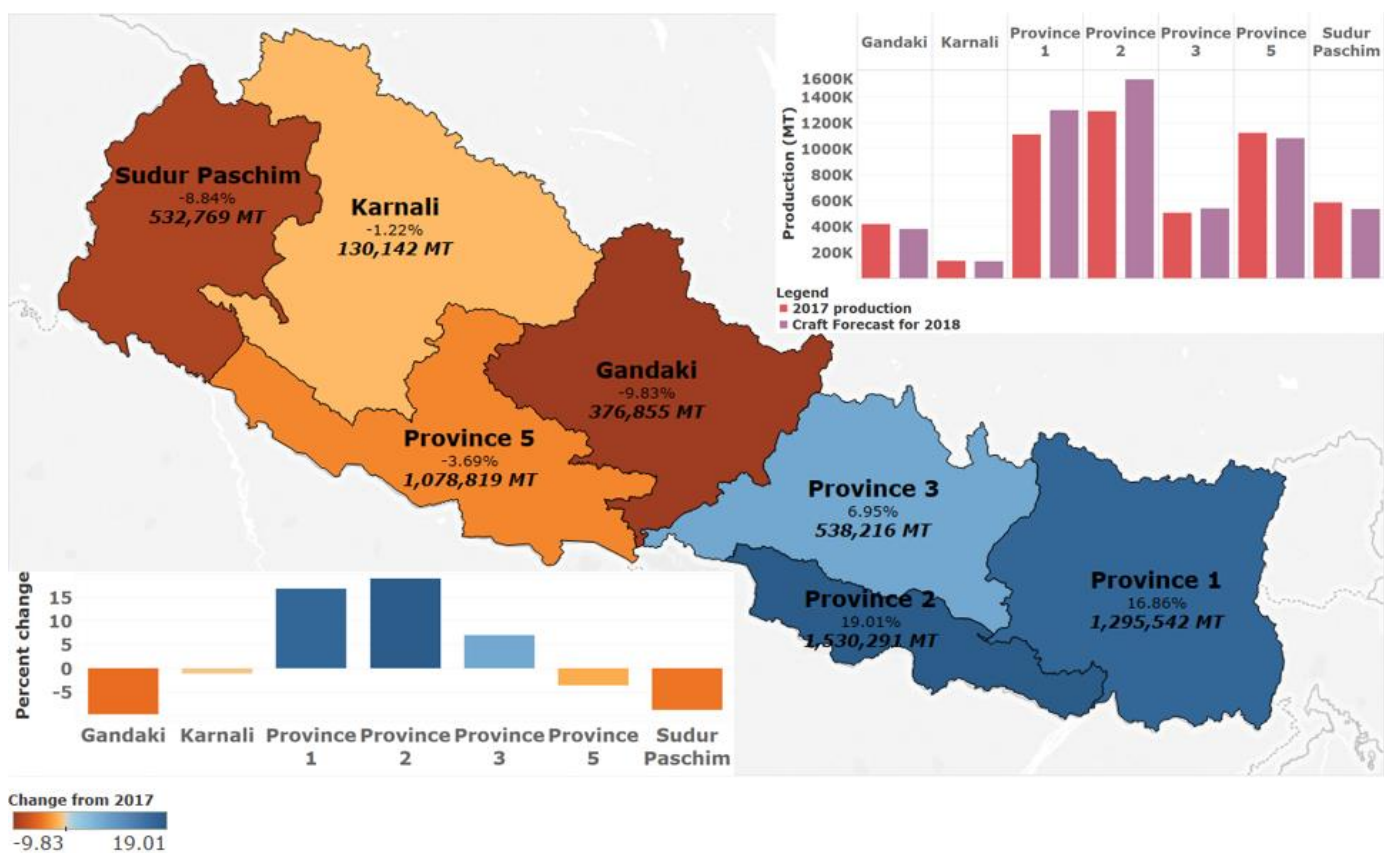


Figure 2: The map shows percent change of paddy production from 2017 and CRAFT forecast for 2018, 2013-2018 (Source: MoALD; CRAFT)



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According to the analysis of data provided by Meteorological Forecast Division (MFD) of DHM's real time airport stations, rainfall in 2018 has been higher than 2017 in the central parts of the country (Gandaki and Province 5). In spite of this, Gandaki is estimated to have a slump in production due to appreciable decline in paddy planted areas as compared to past normal value. Similarly, in the Eastern and Western parts of the country, rainfall has been below last year's records, but the Eastern parts of the country received better rainfall during the growing season, which should contribute to better production in the region. The irrigation scheduling and pesticide management have been reported to be mostly good in the Eastern and Central provinces while they have been reported to be satisfactory in the Western parts of the country.

This is the final estimate for the season.



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Under the research theme on Climate Risk Management, the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) developed a crop yield-forecasting tool customized for the South Asia Region known as the CCAFS Regional Agriculture Forecasting Toolbox (CRAFT). CCAFS is a strategic partnership of CGIAR and Future Earth, led by the International Center for Tropical Agriculture (CIAT), which conducts research to identify and address the most important interactions, synergies and tradeoffs between climate change, agriculture and food security.

Methods

CRAFT incorporates a crop simulation model (DSSAT), a weather and seasonal forecast module (CPT) and a GIS mapping module (Map Win GIS). The tool provides the support for spatial input data, spatial crop simulations, integration of seasonal climate forecasts, spatial aggregation, probabilistic analysis of forecast uncertainty, and calibration of model predictions from historical agricultural statistics, analysis and visualization.

Acknowledgements

This publication is a joint product of the Ministry of Agricultural and Livestock Development (MoALD), World Food Programme (WFP), and the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) as part of the Nepal Food Security Monitoring System (NeKSAP). The objective of this collaboration is to strengthen early warning for better food security planning in Nepal in light of the present and anticipated changing climatic conditions. CRAFT provides advance information to stakeholders to better manage within-season climate risks to agriculture. In addition to its use in Nepal, CRAFT is also being used in Bangladesh, Sri Lanka and India.

This report relies on information provided through different agencies, including the Department of Hydrology and Meteorology (DHM), Nepal Agriculture Research Council (NARC), Department of Agriculture, MoALD, WFP, the International Centre for Integrated Mountain Development (ICIMOD), International Water Management Institute (IWMI), and International Research Institute for Climate and Society at Columbia University. All contributors are gratefully acknowledged for their support.

NeKSAP collects, analyzes and presents information on household food security, agriculture, and markets from across Nepal. NeKSAP is implemented by MoALD with strategic guidance from the National Planning Commission (NPC). WFP provides technical assistance for NeKSAP.

Financial Support

CCAFS

This publication has also been made possible with the financial assistance of the European Union, Canadian International Development Agency, World Bank, New Zealand Ministry of Foreign Affairs and Trade and Danida and with the technical support of IFAD. The views expressed herein can in no way be taken to reflect the official opinion of these organizations.



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