



GIEWS Update

The Democratic People's Republic of Korea Food Supply and Demand Outlook in 2017/18 (November/October)

Highlights:

- Aggregate crop production in 2017/18 is forecast at 5.5 million tonnes, 5 percent below the 2016/17 level.
- Production prospects for the 2017/18 early season crops are favourable, partially compensating the reduced main season output gathered in October 2017 that was affected by dry weather conditions.
- The overall cereal deficit for the 2017/18 marketing year (November/October) is forecast at about 652 000 tonnes, well above the previous year's already high level, reflecting an anticipated reduction in domestic output and imports.

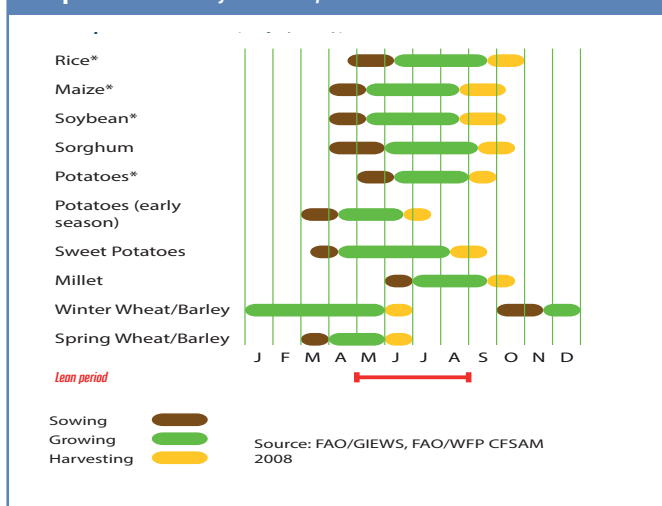
This report assesses the food supply and demand situation in the Democratic People's Republic of Korea for the 2017/18 marketing year (November/October). It presents the 2017/18 aggregate crop production, which includes the 2017 main season, completed by October 2017, and the 2017/18 minor early season

crops (wheat, barley and potatoes) currently being harvested.

Cropping season overview

The main agriculture season starts in April, with the arrival of the spring rains, and the harvest normally takes place between September and October (Figure 1). Low temperatures at the beginning of the season require, to a large extent, raising seedlings (for rice and maize) in protected beds for subsequent transplanting when field conditions become suitable. The availability of water for irrigation is critical in determining the main season output, particularly in the case of paddy crops. Paddy and maize are the major main season crops, contributing to about 80 percent of the national cereal production and are predominantly grown in the southern and central provinces of the country (Figure 2). Early season crops, including winter wheat and barley sown in October-November, are harvested between June and early July, depending on the geographic location within the country. Planted area with wheat and barley crops has declined since 2003 and it has been

Figure 1: Democratic People's Republic of Korea - Crop calendar *major foodcrop



gradually replaced mostly by early potatoes. Despite a minor output compared to the main crops, the early crops are important for food security as they mark the end of the lean season.

Climatic conditions in 2017 cropping season

Weather conditions during the 2017 main cropping season were generally unfavourable. Below-average rainfall amounts and high temperatures prevailed across most of the country from April to June, affecting planting and early development of the 2017 main crops. Rains improved from the first dekad of July over most of the country, easing soil moisture deficits and allowing some late plantings. However, seasonal rains had an erratic spatial and time distribution in August and September, critical months for crop development. Overall, cumulative precipitation during the 2017 main season (April-October) remained well-below the Long Term Average (LTA) over most of the country, particularly affecting the main cereal-producing areas, including North Pyongan, South and North Hwanghae, and North Hamgyong, which collectively account for 60 percent of the total main season output.

By contrast, weather conditions for the 2017/18 early season crops have been generally favourable since October 2017, benefitting planting activities and crop development.

Inputs in 2017/18 cropping season

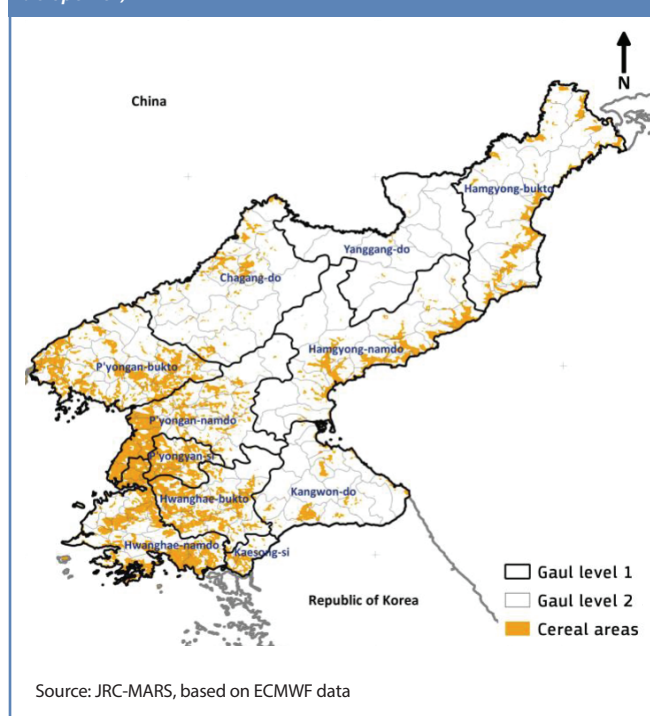
Official information indicates that agricultural inputs, including the supply of fertilizers, fuel and water availability, were well below-average during 2017, which had a negative impact on the 2017 overall crop output. The total supply of nitrogenous fertilizers, phosphate and potash was reported at about 612 000 tonnes in 2017, almost 40 percent below the 2016 high level and 16 percent below the previous five-year average (Table 1).

Table 1: Democratic People's Republic of Korea - Fertilizer statistics (tonnes)

Year	N (ammonium sulphate equivalent, approx. 20.5 % N)	P (superphosphate equivalent, approx. 17% P2O5)	K (KCl-muriate of potash, 48-62%K2O)	Total
Avg (5-yrs)	678 180	16 663	6 683	701 526
2016	837 171	11 911	930	850 012
2017	599 017	10 776	2 343	612 136

Source: Ministry of Agriculture (MoA)

Figure 2: Democratic People's Republic of Korea - Main cereal areas (MARS-JRC crop mask based on topography indicating areas with a slope < 5°)



The aggregate amount of diesel and petrol supplies in 2017 was 60 350 tonnes, 11 percent below last year's good level and close to the 2014 and 2015 low levels (Table 2), while total irrigation water availability was reported at about 35 percent below the five-year average due to persistent countrywide dry weather conditions.

Aggregate cereal production in 2017/18

Area planted

Based on official figures provided by the Ministry of Agriculture (MoA), the aggregate 2017/18 planted area is set at 1.4 million hectares, 7 percent lower than the 2016/17 revised level (Table 3). It includes the estimates for the 2017 main season crops and forecasts for the 2017/18 minor early season crops. In 2014, the Government initiated a reforestation programme that resulted in a gradual decline in production from sloping lands. By 2017, the area planted with crops on sloping land is estimated to be negligible. To reflect this decreasing trend in cultivating sloping land for cereal production, FAO has revised its production time series.

Table 2: Democratic People's Republic of Korea - Fuel Consumption in 2013-2017
(tonnes)

Fuel Type	2013	2014	2015	2016	2017	% change, 2017 over 2016
Diesel	64 425	55 171	53 700	60 990	54 350	-11
Petrol	7 000	5 500	7 000	7 000	6 000	-14
Total	71 425	60 671	60 700	67 990	60 350	-11

Source: Ministry of Agriculture (MoA).

MoA data for the 2017 main season indicate that about 1.23 million hectares were planted with cereals, potatoes and soybeans, with a 9 percent decrease from the 2016 average level. The area with the paddy crop, which is predominantly irrigated, is reported at 475 000 hectares, marginally above the 2016 low level and 6 percent below the five-year average as poor rains and reduced irrigation water availability at sowing time limited plantings. In 2017, planted area with maize was officially estimated at 510 000 hectares, about 6 percent below the level in 2016, essentially due to unfavourable rains. The area planted with soybeans in 2017 is officially estimated at 150 000 hectares, with a contraction of 10 percent compared to the average and 15 percent year-on-year. Similarly, the dry weather conditions considerably reduced the area under minor crops, namely potatoes, sorghum, millet and buckwheat.

The area planted with winter wheat and barley crops is estimated by FAO at 50 000 hectares, about 10 percent

above last year's reduced level, while the area planted to early season potatoes is set to increase slightly year-on-year to 130 000 hectares.

Crop yields and production

The aggregate 2017/18 cereal production is forecast at about 5.5 million tonnes (in cereal equivalent and paddy terms), 4.5 percent below the 2016/17 output, due to dry weather conditions and low irrigation water availabilities during the main cropping season. The 2017 main season crop production is estimated at 5.1 million tonnes, 6 percent below the 2016 above-average level. The year-on-year decrease is mostly attributed to a reduction in 2017 paddy production, estimated at 2.4 million tonnes. The output of soybeans and potatoes are officially estimated at 148 000 and 223 000 tonnes, respectively, showing a decrease compared to the previous year's good level by 33 and 21 percent, respectively. By contrast, the 2017 maize production is estimated to remain close to 2016's average level of 2.2 million tonnes as the decrease in plantings was more than offset by a 7 percent increase in yields due to farmers' efforts to provide supplementary irrigation.

According to official information by the MoA, the 2018 production of early season crops (wheat, barley and early season potatoes) is forecast at about average

Table 3: Democratic People's Republic of Korea - Comparison between 2017/18 and 2016/17 national aggregate production of food crops in cereal equivalent

	2017/18			2016/17			Change 2017/18 from 2016/17		
	Area '000 ha	Yield t/ha	Prodn. '000 t	Area '000 ha	Yield t/ha	Prodn. '000 t	Area %	Yield %	Prodn. %
MAIN SEASON	1 230.5	4.1	5 091.1	1 350.6	4.0	5 412.0	-8.9	3.3	-5.9
Paddy	475.2	5.0	2 383.3	468.7	5.4	2 536.4	1.4	-7.3	-6.0
Maize	510.2	4.3	2 199.8	544.5	4.0	2 195.2	-6.3	6.9	0.2
Other cereals	65.0	2.1	136.5	72.1	2.2	156.4	-9.9	-3.2	-12.7
Potatoes ¹	30.3	4.9	148.3	40.0	5.6	222.0	-24.2	-11.9	-33.2
Soybeans	149.8	1.5	223.3	175.4	1.6	281.9	-14.6	-7.3	-20.8
Sloping land (mostly maize) ²	0.0	0.0	0.0	50.0	0.4	20.0	-100.0	-100.0	-100.0
EARLY SEASON (winter and spring)	180.0	2.2	395.5	172.3	1.9	332.0	4.5	14.0	19.1
Wheat and barley	50.0	1.4	70.5	45.0	1.2	55.2	11.1	14.9	27.6
Potatoes	130.0	2.5	325.0	127.3	2.2	276.8	2.2	14.9	17.4
TOTAL - NATIONAL	1 410.5	3.9	5 486.6	1 522.9	3.8	5 744.0	-7.4	3.1	-4.5

¹Potatoes in cereal equivalent at 25 percent conversion rate.

²The area planted with crops on sloping land has been revised downward to reflect the gradual decline in the cultivation of these areas following the Government's reforestation programme, which started in 2014. The revised estimate for the area cultivated to crops on sloping lands in 2016/17 is put at 50 000 hectares, while for 2017/18 it is estimated to be negligible.

Source: Ministry of Agriculture (MoA)

level at 396 000 tonnes (cereal equivalent), showing a 20 percent recovery from last year's reduced level.

Food supply/demand balance in 2017/18

The food supply/demand balance sheet, including cereals and cereal equivalent of potatoes and soybeans, for the 2017/18 marketing year (November/October) is summarized in Table 4. The following assumptions were made in preparing the balance sheet:

- The aggregate 2017/18 food production is forecast at about 4.7 million tonnes (in cereal equivalent and rice in milled terms).
- The food use is estimated at about 4.4 million tonnes, using a projected population of 25.28 million¹ and per capita annual average consumption of basic food commodities of 175 kg. The per-capita consumption rate comprises 154 kg of cereals (60.4 kg of milled rice, 82.3 kg of maize, 7 kg of wheat and barley and 4.1 kg of other cereals), 12 kg of potatoes and 9.7 kg of soybeans, in cereal equivalent. For the calculation of food consumption, the FAO/GIEWS's cereal balance methodology has been applied. However, it should be noted that the weighted average consumption rate used by the Government is set at 207 kg per person per year, leading to a significantly higher estimate of the cereal food requirements.
- The feed use is forecast at about 130 000 tonnes, including 110 000 tonnes of maize and 20 000 tonnes of potatoes. As official information on the number of livestock in 2017 is not available, the feed use estimate remained unchanged from the previous year's level.
- The seed requirements for the next seasons are estimated at 230 000 tonnes on the basis of the prevalent seed rates used in the country and the average area sown in the past three years, allowing for some multiple planting/sowing.
- The post-harvest losses (PHL) are estimated at about 740 000 tonnes. Based on a 2014 study carried out by the Pyongyang Agricultural Campus and Kim Il Sung University, in collaboration with FAO and UNDP, the PHL rates are estimated at 15.6 percent for rice, 17 percent for maize and 16.4 percent for wheat, barley and other cereals. As the study did not assess the PHL for potatoes and soybeans, the rates used in past FAO/GIEWS reports of 15 percent and 5 percent, respectively, have been applied.

Table 4. Democratic People's Republic of Korea - Food balance sheet for marketing year November 2017-October 2018
(*'000 tonnes*)

	Rice (milled) ¹	Maize	Wheat and Barley	Other cereals	Potatoes ²	Soybeans ³	Total
DOMESTIC AVAILABILITY	1573	2200	71	137	473	268	4722
Main-season farm production	1573	2200		137	148	268	4326
Winter/spring production			71		325		396
Stock draw-down	0	0	0	0	0	0	0
TOTAL UTILIZATION	1819	2627	201	137	473	267	5524
Food use	1525	2073	177	105	302	245	4427
Feed use		110			20		130
Seed requirement	50	70	12	10	80	9	230
Post harvest losses	245	374	12	22	71	13	737
Stock build-up	0	0	0	0	0	0	0
IMPORT REQUIREMENTS	246	427	130	0	0	0	802
Anticipated commercial Import							150
Uncovered deficit							652

Note: Figures may not add up exactly due to rounding.

¹ Paddy to rice milling rate of 66 percent.

² Including potatoes in cereal equivalent at 25 percent conversion rate.

³ Soybeans cereal equivalent using a factor of 1.2.

¹ **Population:** The total national population at the end of December 2013 was officially estimated at 24.88 million (including 700 000 special entity personnel). Applying the official annual population growth rate of 0.55 percent, the mid-marketing year population is projected at 25.28 million.

- A paddy-to-rice milling ratio of 66 percent is used. This is consistent with the rates used in other countries of the region. No other grains are converted to milled form as the food and non-food requirements are expressed in whole grain form.
- The potatoes production has been expressed in cereal equivalent using a conversion rate of 25 percent.
- As soybeans is the principal source of protein in the country, it has been added to the balance sheet. On average, the calorie content of soybeans is about 20 percent higher than that of cereals, hence the production is multiplied by 1.2 to express the availability in cereal equivalent terms.
- In the absence of official information on opening and closing stocks, no changes are envisaged for all crops.
- The total cereal import requirements in 2017/18 (November/October) are estimated at 802 000 tonnes. Assuming that the official import target of 150 000 tonnes of cereals is met, there will be an uncovered deficit of 652 000 tonnes for the current marketing year.

This report is prepared by the **Global Information and Early Warning System (GIEWS)** of the Trade and Markets Division of FAO. The updates focus on developing anomalous conditions aimed at providing early warnings, as well as latest and more elaborate information than other GIEWS regular reports on the food security situation of countries, at both national and sub-national levels. None of the information in this report should be regarded as statements of governmental views.

For more information visit the **GIEWS Website** at: www.fao.org/giews

Enquiries may be directed to:

Global Information and Early Warning System (GIEWS)

Trade and Markets Division (EST)

Food and Agriculture Organization of the United Nations (FAO)

Viale delle Terme di Caracalla

00153 Rome, Italy

E-mail: GIEWS1@fao.org

The designations employed and the presentation of material in this information product do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations (FAO) concerning the legal or development status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. The mention of specific companies or products of manufacturers, whether or not these have been patented, does not imply that these have been endorsed or recommended by FAO in preference to others of a similar nature that are not mentioned.

The views expressed in this information product are those of the author(s) and do not necessarily reflect the views or policies of FAO.

© FAO, 2018

FAO encourages the use, reproduction and dissemination of material in this information product. Except where otherwise indicated, material may be copied, downloaded and printed for private study, research and teaching purposes, or for use in non-commercial products or services, provided that appropriate acknowledgment of FAO as the source and copyright holder is given and that FAO's endorsement of users' views, products or services is not implied in any way.

All requests for translation and adaptation rights, and for resale and other commercial use rights should be made via www.fao.org/contact-us/licence-request or addressed to copyright@fao.org.

FAO information products are available on the FAO website (www.fao.org/publications) and can be purchased through publications-sales@fao.org.

This publication has been printed using selected products and processes so as to ensure minimal environmental impact and to promote sustainable forest management.