

Wheat Production and Food Security: Global Statistics and the Nigerian Situation – A Review

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ABSTRACT

This paper aims to review the current world wheat production and how it affects Nigerian and global food security. Wheat contains higher protein compared with maize and rice and has been reported as the leader among sources of cereal protein. Wheat has a low glycemic index, therefore, it is a healthy form of starch which is good for the body. Wheat is the most commonly used cereal grain in the globe and it happens to be the most acceptable by most ethnicity, tribe, race and religion around the continents of the world. It is the most suitable in confectioneries due to its gluten content as seen in bread making. The demand for wheat far exceeds the supply which poses a threat to global food security especially in the Middle East and Africa. Wheat is a crucial ingredient in the world's food supply. Global wheat prices are on the rise as a result of the Russia and Ukraine war, both countries account for about 30 % of global world trade of wheat. From the figures in this review, global wheat production seems to still be at an acceptable level, However, Nigeria on the other hand, is making conscious effort to increase wheat production so as to address food security issues which has resulted in high cost of food commodities.

Keywords: Cereal, Production, Uses, Challenges, Prospects

INTRODUCTION

Wheat is a crucial ingredient in the world's food supply (Karatayev *et al.*, 2022). Unfortunately, climate change threatens global food security as stated by Jiang *et al.* (2022). Generally, cereals supply fifty percent of human energy needs. Enghiad *et al.* (2017) referred to wheat as a key global commodity and a staple in household diets. Wheat is a staple food which is used by all nations and cultures hence probably grown in all the continents of the world. Wheat is used globally in many baked, cooked and fried products. In Sub-Saharan Africa, Nigeria comes second in wheat consumption after South Africa (TAAT, 2021).

In Nigeria, the demand of wheat especially by youths and urban dwellers is on the increase as a result of the growing population that consume it in the form of noodles, pasta (spaghetti and macaroni), bread, semolina etc.

Wheat can be comfortably classified as among the oldest grain crops grown by man worldwide. The Food and Agriculture Organization, FAO reported through the 2021 Statistical year book that wheat made eight percent (0.8 billion tonnes) of the cultivated and harvested crops around the world in 2019. Wheat is a cereal that is eaten around the world and has become a significant component of the human diet, especially in developing nations like Nigeria. Wheat is among the most significant domesticated food crops in the globe, and has been farmed for more than 11,000 years. The wild species first appeared in the Middle East. Wheat originated in Southwest Asia, where it is frequently used to make dishes like pasta, noodles, and more frequently bread and chapatti. In India, more than 90 % of wheat is consumed as chapatti. In India and some parts of Middle East, Chapatti is the commonest staple food from wheat. According to United States Department of Agriculture, 725 million tonnes of wheat was produced in 2015 globally (Sarfaraz *et al.*, 2017). The United States Department of Agriculture data shows that Nigeria has annual demand of between 4.5 and 5.0 million tonnes of wheat but produces only about 60,000 metric tonnes. This implies that ninety percent of wheat locally consumed is imported. This has increased dependence on importation of wheat from other countries. This is in line with the report of the CBN

(2024), where it was reported that the current demand for wheat in Nigeria is between 5-6 million Metric Tonnes (MT). Out of this value, Nigeria locally produces 1 per cent only (63,000 MT). In order to meet the local demand, Nigeria imports above 5 million Metric Tonnes (MT) which cost up to \$ 2Billion. Consequently, wheat ranks second highest contributor to Nigeria's food import bill. The Central Bank of Nigeria, CBN, has decided to intervene in the wheat value chain by financing increased domestic wheat production through the Anchor Borrowers Programme (ABP). Most plant-based foods in the globe contain cereal as the major ingredient. This makes cereals the most important among the food crops (Guerrieri and Cavaletto, 2018; Papageorgiou and Skendi, 2018). The most commonly used cereal grains include wheat, rice and maize. Wheat contains more proteins than maize and rice. Due to the cost of wheat, most food processors are now diverting to maize and rice. Cereal flours are used most times as ingredients in extruded foods (Offiah *et al.*, 2019). According to Román *et al.* (2018), the most popular cereal flours utilized as gluten and non-gluten flours in industrialized countries are wheat and rice. Wheat has been acknowledged as the most important cereal crop in the globe and shortage of wheat will lead to a global food crisis, therefore, there is a need to review the current world wheat production and how it affects Nigerian and global food security.

Uses of wheat

The endosperm, bran, and germ make up a wheat grain, constituting 2-3, 8 and 80-85 % respectively. The endosperm is usually separated from the germ and bran. Hard and soft wheat flour contains 15 and 10 % proteins respectively. Wheat is a good source of carbohydrates (starch). Cereals generally contain small amount of lipids (Cornell, 2012). Lipids are distributed all over the wheat grain in minor constituents, although more in the germ. White flour is obtained from the endosperm, hence, it may be regarded as the most important part of the wheat grain. The endosperm contains most of the proteins of the wheat grain which are referred to as storage proteins (mainly gliadins and glutenins) and constitutes 10-14 % of the wheat grain. Globulin (triticin) are in little amounts. The conditions of the soil and weather may affect the size and shape of the wheat grain. The shape of wheat grain may be triangular or evenly rounded depending on type and cultivar. The United States has classified wheat into five classes based on some factors (hardness, species, colour, planting time), namely soft red winter, white, hard red winter, durum and hard red spring (Bechtel *et al.*, 2009).

White wheat may be more acceptable compared with red wheat as a result of less bitter taste of white wheat. This is particularly for whole grain products because the bran contains high levels of volatile phenolic compounds which are potentially bitter (Grafenauer *et al.*, 2020).

Wheat is mostly used in the form of flour. Wheat's utilization is determined by its grain composition and protein level. Whole wheat flour is very high in dietary fibre (Zhang *et al.*, 2018) therefore could be classified as an excellent health-building food with health promoting benefits. Wheat quality is mainly judged by the quantity and the strength of the gluten content rather than nutritional quality (Punia *et al.*, 2019). The quality of product is determined by the quality of flour, a very good example is seen in bread making. As a result of the gluten contained in wheat, it is the commonest used cereal in bread production. Bread is the major product produced from wheat flour and it is the most consumed baked product worldwide. The major difference between wheat flour and flours from other cereals is the ability of dough formation in wheat flour. There are two types of wheat with respect to their protein (gluten) content: hard wheat and soft wheat. Hard wheat flour has high protein content while soft wheat flour contains lower quantity of protein. Hard wheat flour is used to make bread and fine cakes because of its high protein level, whereas soft wheat flour is used to make breakfast foods, cookies and crackers. Wheat flour is used mainly in the production of snacks such as pies, biscuits, cookies. It is also used in the production of pizza. Durum wheat is the most cultivated common wheat; it is used for pasta products such as macaroni and spaghetti. Starch may be derived from wheat. Starch is commonly used in industries (food and non-food) and in the home. Due to the pasting property, it is used in products such as custards, gravies and soups. The starch obtained from wheat may be used in confectionery and brewing after being converted to syrup. Due to the bonding properties of the starch, it may be used as adhesive in cardboard boxes. The starch may also be modified and used in paper and fabrics sizing. Globally, there is high demand of some processed foods like bread and noodles. The use of wheat has been streamlined recently, mainly to obtain a wide range of grain quality for diverse purposes. Wheat is a very useful grain and beneficial in diverse ways such as both nutritionally and in confectionery. Wheat also have antioxidant properties (Nwadi and Okonkwo, 2021) which makes it beneficial to health.

World wheat production

Wheat is a cereal which is consumed globally and has formed a crucial part of the diet of humans especially in developing countries. China ranked number one in wheat producing countries (World Population Review 2022). In the near future, the Russia-Ukraine war may likely affect world wheat production which will in turn likely affect global food security especially in African countries such as Nigeria. As at 2018, both Russia and Ukraine were among the top wheat suppliers in Nigeria, with Russia topping the list (Dambazau *et al.*, 2021). Ukraine is a major wheat exporter. United States Department of Agriculture/Foreign Agricultural Service recently reported that the Russian invasion of Ukraine has significantly affected global grain markets. It was also reported that as a result of the war, Ukraine has almost ceased export of wheat and is struggling to resume transportation by rail instead of by sea, however, Russia has resumed wheat exports with steady prices. As at January 2022, the world wheat production was at a value of 778.6 million metric tonnes (Figure 1). As at July 2022, the world wheat production was at 771,636 (1000 MT). There was an obvious decline and this may be attributed to the Ukraine-Russia war. The value may continue to tend towards a decline as long as the war persists. Many authors reported that the negative effect of shortage might be felt and would be severe if urgent steps are not taken to increase and sustain global production. Despite the Russia-Ukraine war, the two countries still made the list of the top ten world wheat producers as at July 2022 and till date (Table 1).

Table 1: Top ten world wheat producers

S/N	Market	% of Global Production	Total Production (2024/2025, Metric Tons)
1.	China	18%	140.1 Million
2.	European Union	15%	121.02 Million
3.	India	14%	113.29 Million
4.	Russia	10%	81.6 Million
5.	United States	7%	53.65 Million
6.	Canada	4%	34.96 Million
7.	Australia	4%	34.11 Million
8.	Pakistan	4%	31.58 Million
9.	Ukraine	3%	23.4 Million
10.	Turkey	2%	19 Million

Source: (USDA FAS, 2025)

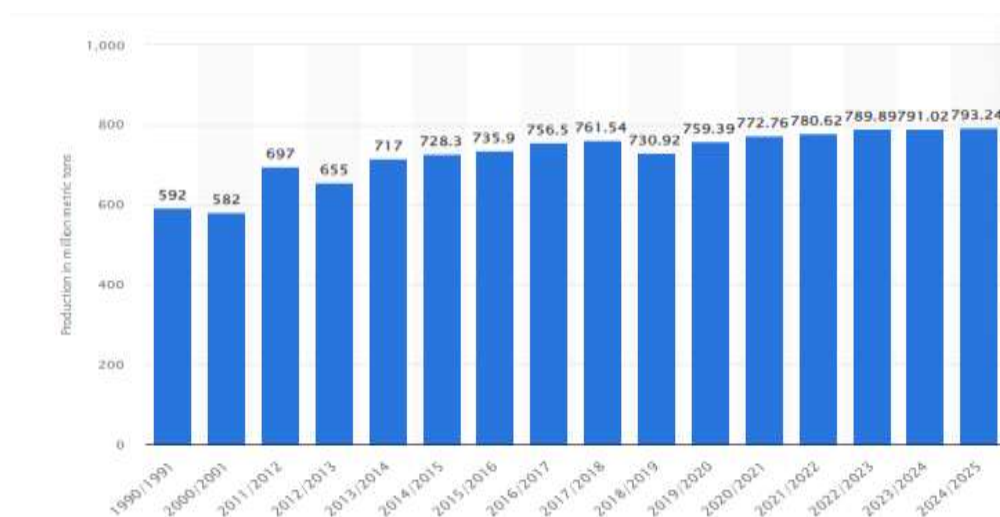


Figure 1: Global wheat production from 1990/1991 to 2024/2025 (in million metric tons)

Source: (Shahbandeh 2025)

Wheat production in Nigeria

The importance of wheat in Nigeria cannot be overemphasized. Many foods (noodles, bread and spaghetti) and snacks (cakes, biscuits and cookies), including local foods (danwake, fura and tuwo) we eat in Nigeria are made from wheat. Wheat bran is used in the production of animal feed. The states in Northern Nigeria which support wheat production include Kano, Yobe, Bauchi, Zamfara, Kaduna, Kebbi, Gombe, Sokoto, Katsina, Jigawa, Adamawa and Borno. Wheat production in Nigeria has been low (Table 2) over the years (Dambazau *et al.*, 2021). Dambazau *et al.* (2021) in a review concluded that for self-sufficiency to be attained in wheat production in Nigeria, implementation of long-term plans in a phase wise manner is necessary. During the fourth Annual Nigerian Food Processors and Nutrition Leadership Forum in March 2022, the Chairman of the forum, Alhaji Aliko Dangote expressed concerns that there will be food shortage, especially wheat in June 2022 as a result of the Russia-Ukraine war. He added that Russia and Ukraine produce 30 % and 26 % of the world's urea and potash respectively including phosphate so as a result, there will be a scarcity of fertilizer which will affect crop yield. Alhaji Aliko Dangote's forecast on shortage of wheat corroborates the earlier statement of Mr. Boye Olusanya, the Chief Executive Officer of Flour Mills of Nigeria who reported that the Russia and Ukraine war will adversely affect world wheat production hence the crisis will affect Nigeria and other African countries through food shortage especially wheat (Alabi, 2022).

Table 2: Wheat Production in Nigeria (2000 – 2020)

S/N	Year	QUANTITY (1000 metric tonnes)
1	2001	51
2	2002	54
3	2003	58
4	2004	62
5	2005	66
6	2006	71
7	2007	44
8	2008	53
9	2009	80
10	2010	110
11	2011	165
12	2012	100
13	2013	80
14	2014	91.3
15	2015	60
16	2016	60
17	2017	67
18	2018	60
19	2019	60
20	2020	60

Source: (Dambazau *et al.*, 2021)

According to one of the Nigerian Dailies, the Ministry of Agriculture recorded 60,000 metric tonnes of wheat

produced in Nigeria in 2016 while the National Bureau of Statistics reported 36,943 metric tonnes of wheat produced in Nigeria in 2021. The identified states which contributed to the 36,943 metric tonnes include Kano, Jigawa, Kebbi, Bauchi, Kaduna, Gombe, Yobe, Katsina, Plateau, Sokoto, Zamfara, Borno and Adamawa. Kano contributed the highest at 6,512.8MT; then Jigawa, 5,854.8MT; and Kebbi, 4,422MT (Nnodim, 2022). Okojie (2022) stated that wheat production in Nigeria faced a decline of over 38 % in five years despite the funding by the federal government to boost output and has attributed this decline to farmers' preference for cultivation of rice, insecurity, corruption and lack of close supervision. A former Executive Director at Lake Chad Research Institute, Oluwasina Olabanji has attributed this decline to insecurity owing to the fact that in the past, Borno state was the largest producer of wheat in Nigeria but now ranked twelfth among the major producing states (Okojie, 2022). As a result, wheat import is accelerated in Nigeria despite the dollar shortages. Nigeria is presently facing unprecedented high cost of food items generally (Dambazau *et al.*, 2021). The United States Department of Agriculture suggested that the Nigerian government needs to ensure that millers buy local wheat at a fixed price (\$ 400) per tonnes but stated that the members of the Wheat Farmers Association of Nigeria (WFAN) prefer selling to Non-governmental agencies and Sahel countries like Niger, Chad, Mali and Burkina Faso due to the more attractive markets. In 2022, experts said that with the Central Bank of Nigeria, new initiative programmes to boost wheat production and flour millers commitment, wheat production target of 400,000 metric tonnes will be achieved in 2023.

In 2023, (Reidy, 2023) reported a projection of wheat production of 110,000 tonnes harvested from 100,000 hectares of land in Nigeria, with a population of 213 million people, which also happens to have the largest economy in Africa. It was also reported that as a result of the fuel subsidy removal, the purchasing power of Nigerians reduced as a result of high cost of imported wheat which decreased the consumption of wheat-based products despite the fact that \$ 235 million was approved by the Nigerian government for all of its 36 states to manage food shortages.

In 2024, there was a projection that wheat consumption in Nigeria would reach 5.2 million MT while wheat production will reduce to 48.7 million MT by 2026. This projection derives from the yearly increase in demand by 0.3 % and yearly decrease in supply by 2.5 % since 2017. However, since 1966, wheat supply has decreased yearly by 1.2 % (ReportLinker, 2024).

During the West and Central Africa wheat summit held in Abuja, Nigeria in 2024, which focused on elevating wheat production to attain food security and economic resilience in West and Central Africa region, the African Development Bank projected 2.5 billion African population by 2050 from the current 1.5 billion and added that two decades ago, the total wheat consumption in Africa was about 25 million MT but has recently increased to 75 million MT, it was also reported that Nigeria has put in measures to ensure national wheat self-sufficiency (Adaji, 2024).

The CBN (2024) reported that the current demand for wheat in Nigeria is between 5-6 million Metric Tonnes (MT). Out of this value, Nigeria locally produces 1 per cent only (63,000 MT). In order to meet the local demand, Nigeria imports above 5 million Metric Tonnes (MT) which cost up to \$ 2Billion. Consequently, wheat ranks second highest contributor to Nigeria's food import bill. The Central Bank of Nigeria, CBN, has decided to intervene in the wheat value chain by financing increased domestic wheat production through the Anchor Borrowers Programme (ABP).

Alkali (2025) reported environmental incompatibility as the bane of wheat production in Nigeria as a result of absence of rains during the harmattan season since wheat requires cold climate in order to grow.

On Wednesday, February 19, 2025, it was announced on Channels Television's Politics Today in Abuja by the Minister of State for Agriculture and Food Security, Aliyu Abdullahi that 118 hectares of land was cultivated for wheat across 11 states in Nigeria in order to reduce scarcity and boost food production (Abdulrahman, 2025).

Challenges caused by the Ukraine and Russia war

The war in Ukraine began on February 24 2022, this has affected planting and harvesting season and disrupted both local and national supply chains thereby jeopardizing food security. The country population of Ukraine is

44 million, 12.6 million live in rural areas, as at June 2022, internally displaced persons are 6.3 million while 36 % are in need of lifesaving assistance. As at June 13 2022, over 7.3 million persons have fled Ukraine. Ukraine and Russia are leaders in supply of agricultural products globally (FAO, 2022a). Russia in addition to food is known globally to produce and export fuel and fertilizer. The war has led to hike in prices resulting in food insecurity in the form of hunger and malnutrition. According to WFP, some world leaders have jointly issued a statement in a bid to address the global food security crisis. The world leaders include:

1. The Director General, Food and Agriculture Organization (FAO), Qu Dongyu,
2. The Managing Director International Monetary Fund (IMF), Kristalina Georgieva,
3. The World Bank Group (WBG), David Malpass,
4. The Executive Director, World Food Programme (WFP), David Beasley and
5. The Director General, World Trade Organization (WTO), Ngozi Okonjo-Iweala

The statement is that there have been a disruption in fuel, fertilizer and food markets as a result of COVID-19 pandemic, international supply chain interruption and the war in Ukraine. They added that the number of people suffering acute food insecurity had risen to 345 million in 82 countries (FAO, 2022b)

Ukraine and Russia are among the world's biggest producers and exporters of wheat and corn. The Middle East and Africa are dependent on wheat imported from the Black sea Region. The Russia-Ukraine war has resulted in increased food insecurity in these areas resulting from high prices of grain. The Foreign Agricultural Service of the United States Department of Agriculture has projected that the 2022-23 wheat produced in Ukraine will be at 19.5 million tonnes (USDA, 2022b), this value is below last year's value of 33 million Tonnes and appears to be the least in ten years (Donley, 2022). In Nigeria, after corn and rice, wheat ranks third most consumed grain. Over 50 % of wheat required in Nigeria is imported from the Black sea countries. The prolonged crisis has forced some bakeries to close down as a result of high cost of wheat thereby making it out of reach of the masses (Lyddon, 2022). Bread bakers went on strike nationwide as a result of high operational cost occasioned by high cost of flour.

Prospects to address food security crisis

The operations of the FAO in Ukraine has been on since 2003. As a result of the war the FAO has activated the Rapid Response Plan (RRP) to ensure food security through support with crop, livestock and cash to smallholder farmers and those most affected by the conflict. FAO reported that it had received USD 70.4 million out of the USD 180.4 million required to help 979, 320 persons and solve 25 % of the grain storage facility problems in Ukraine.

In May 2022, 862 tonnes of seed potatoes were distributed to vulnerable rural families. The Ukrainian government has reported 75 million tonnes total storage capacity out of which only 30 % (containing 22 million tonnes from 2021 harvest) is available yet to be exported, 14 % are destroyed while 10 % are in the territories where Russian troops have conquered.

The FAO received USD 17 million Japan-funded project and USD 40 million from Canada (for 2.4 million tonnes) in July and August 2022 respectively to address grain storage deficit.

In July 2022 Turkey and the United Nations brokered a deal in separately signed agreements with Russia and Ukraine which will allow Ukraine to export grain while Russia will export grain and fertilizer to world markets through the Black Sea ports (Donley, 2022).

Nigeria produced 90,000 tonnes of wheat in 2021-22. It has been projected that in 2022-23, 160,000 tonnes of wheat will be produced in Nigeria which is a welcome development (Lyddon, 2022). The increase is speculated because there is support for wheat production from Central Bank of Nigeria, the African Development Bank, government and private companies such as Olam flour mills collaborating with some research institutes (Lake Chad Research Institute (LCRI) and International Center for Agricultural Research in the Dry Areas (ICARDA).

Stagnation in wheat production in Nigeria despite multiple interventions

Nigeria is not left out in the prevailing global food insecurity, however, it is worse among families with low levels of education and having many dependents. (Samputra, 2025) Reported that the number of people unable to afford healthy food globally increased to 3.1 billion from 112 million. (Samputra, 2025) also added that men are less likely to be food insecure compared with women. The likely reasons why there is stagnation in wheat production in Nigeria despite multiple interventions may be attributed to the following reasons: Land use patterns, farmer preference for rice, weak extension services and insecurity (caused by bandits, farmer-herder conflicts, militants or insurgents). The challenges of the farmers are also climate-related during some seasons of the year such as dry season. Jigawa is one of the states which support wheat production, however, (Mohammed and Favretto, 2025) reported that women farmers are faced with the challenge of recurrent floods which adversely affect their productivity as a result of being displaced from their homes.

The more disturbing culprits in recent times is insecurity. All these prevent farmers from cultivating land which largely disrupts supply chain and sometimes lead to displacement and even death of farmers as the case may be. The end result is reduction in agricultural productivity, increase in food prices, widespread food insecurity, threatened livelihoods and overall food supply in Nigeria. Borno and Zamfara states which are among the wheat-producing states are largely affected in these incidents.

Insecurity

Kaila and Azad (2023) emphasized the need to understand the relationship between conflict and food insecurity which will go a long way to solve the food insecurity problems of the future. This is crucial because many Nigerians (about 70 %) engage in subsistence farming and experience-based indicators have proven that increase in food security is dependent on agricultural productivity (Villacis *et al.*, 2022). Kaila and Azad (2023) carried out a study on the effects of crime and violence on food insecurity and consumption in Nigeria and reported that food insecurity may arise from attacks against households. Many of the inhabitants of these households are farmers especially in the rural areas of Nigeria. On April 8, 2025, it was reported on Businessday Newspaper that a research and advisory firm, Veriv Africa after a survey conducted in February 2025 based on five agricultural states in Nigeria (Ondo, Benue, Kano, Kaduna, Niger) from over 500 smallholder farmers concluded that farming communities, specifically rural farmers were facing violence with insecurity as the top challenge followed by lack of access to finance (Wada, 2025)

CONCLUSION

World wheat production is a very important topic as it relates to food security. Wheat is a grain used worldwide for both food and non-food uses and it is globally accepted. Its production needs to be sustained so as to ensure that food security is adequately kept in check. From the above findings, Nigeria is making conscious effort to increase wheat production so as to address food security issues. From the figures above, global productions seems to still be acceptable. The FAO is also on top of the situation.

The challenges facing agricultural productivity in Nigeria such as land use patterns, farmer preference for rice, weak extension services and insecurity (caused by bandits, farmer-herder conflicts, militants or insurgents) needs to be addressed so as to boost production and adequately address food insecurity especially regarding wheat production.

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