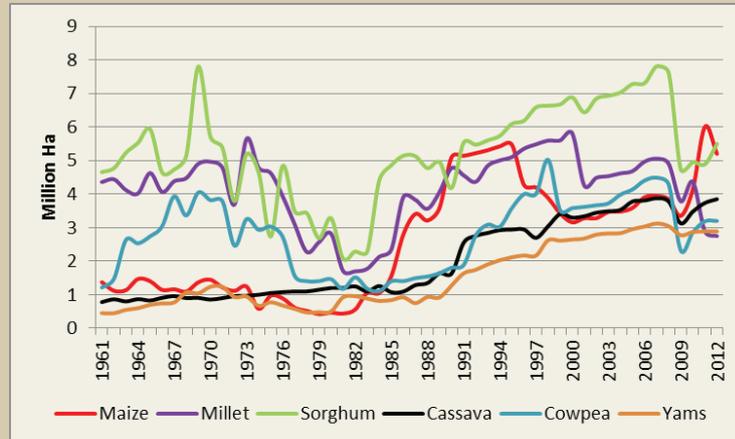


A Quarterly Bulletin of the Drought Tolerant Maize for Africa Project

About the Bulletin

DT Maize is a quarterly publication of the DTMA (Drought Tolerant Maize for Africa) project, funded by the Bill & Melinda Gates Foundation. Its aim is to inform partners and the general public at large about developments related to drought tolerant maize in Sub-Saharan Africa. It publishes short, general articles, relevant news, and events related to DTMA. Articles and news on all aspects of maize in Africa from sister projects and other partners are also welcome. Any feedback from our readers would be appreciated.



Trends of area harvested of major crops in Nigeria (source: calculated by the authors from FAOSTAT, Jan 2014)

Maize in Nigeria - Ready to Take Off

Background

With more than 5.56 million ha of land planted to maize in 2013 (or about 16% of all of Africa's maize area combined), Nigeria has the right to claim the position of the giant of maize production in Africa. Only Tanzania claims a distant second position, with about 4.1 million ha. Maize production in the former country had a humble beginning; it stayed around one million ha through the early 1980s. Accelerated growth started in the mid-1980s, when hybrids were introduced, exceeding the 5 million ha mark in the mid-1990s, following the introduction of early and extra-early varieties; it declined or remained slow during the late 2000s, mainly due to drought and erratic rainfall, but picked up thereafter (Figure 1). Currently it occupies the largest area of cultivated land in the country, followed by sorghum, cassava, millet, cowpea, yam, rice and groundnut, according to the National Bureau of Statistics (NBOS). Maize, sorghum, and millet occupied about 5.5 million, 4.9 million, and 2.9 million ha, respectively, in 2012.

The annual rate of growth (ROG) for maize area was 4.2%, compared to 2.3% and 1.9% for sorghum and millet, respectively, and 5.0% for rice between 1981 and 2012. The ROG for maize yield was 1.4%

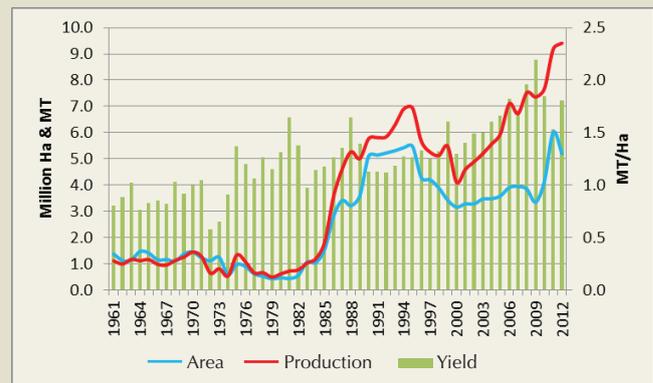


Figure 1: Performance of maize in Nigeria (source: calculated by the authors from FAOSTAT, Jan 2014)

compared to 0.1%, -1.0%, and -1.1%, for sorghum, millet and rice, respectively. This meant that the ROG for production grew at 5.6% per annum for maize compared to 3.9% for rice, 2.5% for sorghum, and 0.9% for millet.

However, productivity of maize has not kept pace with the rate of growth in area. For example, according to NBOS, the national average yield increased gradually from 1.2 MT/ha in the 1980s to 1.9 MT/ha in 2013. The national average rate of growth for area was more than 3.8% per annum, compared to less than 0.5% for

yield, with the accompanying ROGs of about 4.7% for production, between 1994 and 2012. Several constraints contribute to the low yield. Drought, insect pests (e.g. the maize stalk borer *Eldana saccharina*), diseases (Maize Streak Virus, Gray Leaf Spot, and Maize Leaf Blight) and the parasitic weed *Striga hermonthica* are some of the major constraints to maize production in Nigeria. Equally important are institutional and policy issues, including research capacity, level of input use, priorities and issues related to investment in agricultural research and development.

Major Growing Areas

Maize is widely grown across Nigeria. All of the 36 states and the FCT (Federal Capital Territory) grow maize (Figure 2). Those states with the highest maize area are Niger, Kaduna, Ogun, Kogi, Taraba, Katsina, Oyo, Plateau, Ondo, and Kano. Together, these account for nearly 57% of the total area. In a similar fashion, Kaduna, Niger, Plateau, Borno, Kano, Ondo, Ogun, Taraba, Kogi, and Bauchi together account for close to 60% of maize production in the country.

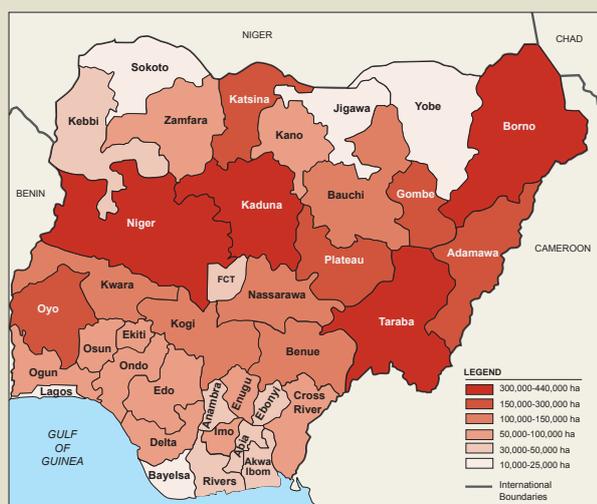


Figure 2: Status of maize in different states of Nigeria

The productivity of maize is extremely variable among the states. Greater rates of growth were reported for 15 of the 36 states and FCT between 1994 and 2012. Notable among these were Yobe (ROG = 7.5%), Katsina (4.8%), Jigawa (4.2%), Zamfara (2.9%), and Oyo (2.5%). By contrast, 22 states had negative growths over the same period – with Kaduna (-6.0%), Taraba (-5.1%), Delta (-5.1%), Imo (-3.9%), and Plateau (-3.7%), showing the highest negative growth rates between 1994 and 2012.

Maize Varieties in Nigeria

Nigeria has the earliest record of maize variety releases in Sub-Saharan Africa (SSA). It started with the releases of four OPVs, vis. NARZO-1, NARZO-2, NARZO-3, and NARZO-4, in 1950. A total of 100 varieties have been released and registered through 2013. Eighteen varieties were known to be available on the market as of 2012.

Variety releases showed continued growth through the 1980s and then slowed down in the 1990s and during the first half of 2000s (Figure 3). Accelerated growth was witnessed between 2008 and 2013, coinciding with the launching of DTMA and the Presidential Initiative to Doubling Maize (PIDOM) in the country. Nigeria released an average of 6.7 varieties per year during this period, compared to an average of 1.0 variety per year during the preceding two periods combined.

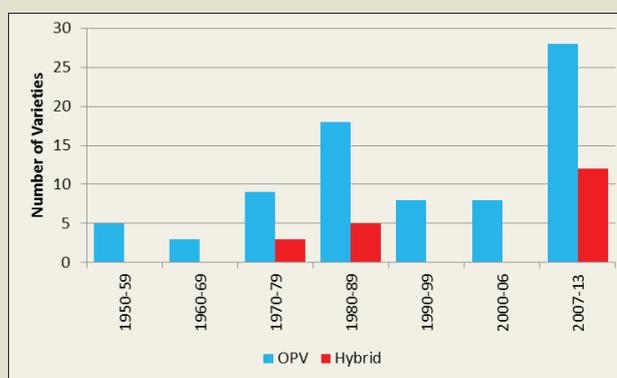


Figure 3: Maize variety releases in Nigeria

The bulk of maize varieties released and registered in Nigeria are OPVs; the first release of hybrids started in 1984 with NARZH 1, NARZH 2, NARZH 3, NARZH 4, NARZH 6, and NARZH 7. Nearly one-third of the maize varieties released in the 1950s to 1980s and the 1990s through the first half of 2000 were hybrids. By contrast, 17 of the 30 varieties (57%) released during the period from 2008 to 2013 were hybrids. Twenty two of these were drought tolerant varieties. Additional desirable traits of the latter include resistance/tolerance to *Striga hermonthica* and the major foliar diseases and insects; three each of these varieties are QPM (quality protein maize) and tolerant to low nitrogen as well as excellent stay-green leaves at maturity, desired by livestock farmers.

The public sector has been the key source of maize varieties in Nigeria. The Institute for Agricultural Research (IAR) at Zaria, and other national institutions such as the Institute of Agricultural Research & Training (IAR&T) Moor Plantation, Ibadan, in close collaboration with IITA, were responsible for the release and registration of

94 (91%) of the 103 maize varieties through 2013. The remaining were hybrids released by one national seed company, Premier Seed Nigeria Ltd, three (Oba-Femi, Oba-98, and Oba-99) in 2001 and an additional six (Oba-Super 3, Oba-Super 4, Oba-Super 5, Oba-Super 6, Oba-Super 7 and Oba-Super 9) in 2009.

The national program, in close collaboration with DTMA (IITA/CIMMYT) released a total of 22 varieties between 2007 and 2013. Eight of those have been widely commercialized by different seed companies (Table 1).

The Maize Seed System of Nigeria

The seed system in Nigeria is dominated by private seed companies and agro-dealers. To date, there are 40 registered national seed companies. Half of these have been established over the last 2 to 5 years. DTMA provided mainly technical support to some of those whereas PASS (Program for Africa's Seed Systems of AGRA) has been instrumental in providing financial support for some startup seed companies. Four of the registered companies (Premier Seed Nigeria Ltd, Maslaha Seed Ltd, Notore Seeds Ltd, and WACOT Seeds Ltd) are categorized as "large" (with annual production of greater than 1000 MT per year); seven are "medium" (500-1000 MT per year); and 29 are "small" (less than 500 MT per year). There are also 23 agro-dealers and a large number of Community-Based Organizations (CBOs) that are

involved in commercializing drought tolerant maize seed in Nigeria, as shown in Table 1.

DTMA catalyzed the production of 735 MT; 3245 MT; and 3650 MT of certified seed of drought tolerant maize cultivars in 2011, 2012, and 2013, respectively, through the seed companies and CBOs. It has been projected that Nigeria would produce 5,170 MT; 6,150 MT; and 7,310 MT of DT maize in the 2014; 2015; and 2016 crop seasons, respectively.

The increased production of DT maize seed is currently leveraging on the Agricultural Transformation Agenda of Government of Nigeria. Enhanced access fertilizers/improved seeds of maize, sorghum and rice and building farmers' skills to adopt recommended agronomic practices are the cardinal thrust of the program. Under the scheme maize seed had been made available to farmers at subsidy level that ranged from 50% to 100% within the last two years (2012 and 2013).

Trade

The FAO trade data show that Nigeria was net-importer of maize between the mid-1970s and late 1980s; imports peaked at 347,000 MT worth about US\$103 million in 1982; both import and export values have been very small since the early 1980s. The average import for 2001-11 was estimated at about 4,450 MT per annum and exports nearly 4,000 MT.

Table 1: Drought tolerant maize varieties commercialized by different seed companies in Nigeria (as at March 2014).

Variety	Company/ Parastatal								
	Maslaha	Premier	Seed Project	Da AllGreen	Daddo	BASDP	KADP	Goldagric	Jikur
Sammaz20		√				√	√		
Sammaz22 ¹	√		√	√				√	√
Sammaz23*	√		√	√	√			√	√
Sammaz24*	√		√						
Sammaz25*	√							√	
Sammaz27	√	√						√	√
Sammaz28		√						√	√
Sammaz29		√			√	√	√		

¹ Asterisks indicate hybrids

Looking Ahead

The accelerated expansion of maize over other cereals, particularly sorghum and millet, may be attributed to its yield advantage per unit area. Very often, farmers prefer maize over the other cereals because of its flexibility for utilization (including being eaten as roasted or boiled cobs during its green stage). It also has the advantage of being less exposed to the ravages of invasive flocks of migratory birds – the *Quelea quelea* in the weaver birds' family. The introduction of maize varieties with resistance to major diseases such as the maize streak virus, downy mildew, southern corn leaf rust, and southern corn leaf blight starting in the mid-1980s had also played a significant role in the expansion of maize at the expense of its competitors. Maize varieties resistant to the major parasitic weed *Striga hermonthica* and drought tolerant maize varieties in recent times are also helping more farmers to grow maize in Nigeria and elsewhere on the continent.

In spite of the expansion in area planted to maize, the yields have remained low. Investment in agriculture in Nigeria has shown the highest increases in SSA but NPK fertilizer use is very low – barely 6 kg (according to the 2002 to 2009 average reported by the World Bank) and less than 5 kg according to the most recent FAO data– compared to the AU recommendation of at least 50 kg.

At various times, the Government of Nigeria had introduced incentives for farmers to use improved varieties and other necessary inputs. In the late 1970s to early 1980s, the country implemented a National Accelerated Food Production Programme (NAFPP) during which it introduced mini-kits for crop

production in which fertilizer use was introduced to farmers. Maize was one of the primed crops covered under the NAFPP. This program was transformed into NAICPP (National Accelerated Industrial Crop Production Program) in 1989-1993 aimed at expanding production and strengthening industrial linkages. The NAICPP stimulates industrial uptake of maize by the flour and feed mills, the breweries and food and beverages sector of the economy. From 2005 to 2006; a Presidential Initiative to Double Production of Maize (PIDOM) was implemented to enhance farmers' access to improved seeds and to demonstrate novel maize production technologies. Beginning from 2012, the Government of Nigeria initiated the implementation of GES (Enhancement Support) scheme aimed at improving the performance of value chains of key commodities, including maize, by enhancing access to single digit credits, improved seeds and fertilizers, and increased input-output market connections. The implementation of the DTMA Project which has facilitated the release and commercialization of drought tolerant varieties therefore complements the government initiatives. The synergy between these projects has already triggered a trajectory boost to maize production and utilization such that a great scope now exists for minimizing deficit in the nation's maize production and demand, estimated at about 6 million MT in 2013.

The key factor for a maize revolution in Nigeria will be a massive increase in its fertilizer and improved seed use. ■

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Upcoming Events

The 2014 DTMA Annual Review and Planning meeting is scheduled for 06-10 October in Addis Ababa, Ethiopia. Further details will follow in due course.