

# Innovation Lab for Food Security Policy

## Nigeria Agricultural Policy Project

State Policy Note 1

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### Promoting Soybean Productivity in Kaduna State: Linking Data and Policy

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#### Introduction and background to Kaduna State

Kaduna State is the third most populous state in Nigeria with a population of 6,113,503 as of the 2006 census. With an annual growth rate of 3% (NpopC, 2006), the projected population for Kaduna State in 2016 was 8,216,037, out of which 75% are engaged in agricultural production as a means of livelihood and employment (Ministry of Agriculture, 2016). With land area of about 4.5 million hectares (ha), it is the sixth largest Nigerian state by land area. However, only about 2.02 million ha is being cultivated—1.94 million of which is upland and 0.08 million lowland.

Figure 1: Local Government Areas of Kaduna State



Source: Kaduna State Ministry of Agriculture

The climate in the state is conducive to the production of food and cash crops, such as maize,

#### Key Messages

- Though Soybean yields in Kaduna State were between 1 & 1.5 MT/ha between 2005 and 2013, they have increased to about 1.9 MT/ha.
- This growth was partly due to several direct activities and programs of government as well as indirect effects due to the creation of a more business friendly environment with spillover to soybean farmers.
- These yields are commendable, though significantly lower than yields in the U.S.A. (3.3 MT/ha) and Brazil and Argentina (2.9 MT/ha).

rice, sorghum, cassava, cowpea, soybeans, ginger, groundnut, wheat and cotton. There are a few popular tree crops including citrus, mango and oil palm. The climatic condition is also suitable for apiculture, livestock and fisheries. In addition to wet season farming, dry season farming is sustained by irrigation from dams and natural water pools mostly along the seasonal rivers and the lowland areas called fadama (Kaduna State Ministry of Agriculture and Forestry [KSMOAF], 2016).

On average, the soil in the state is developed from undifferentiated complex igneous and metamorphic

rocks. It is characterized by fine top soil with reasonable organic matter which enhances the fertility status of the soil (KSMOAF, 2016). The physical properties of the soil allow for the continuous cultivation of a wide variety of crops and forestry development. The state has good grazing land for rearing cattle, sheep, goats and poultry. There are dams, streams and rivers for aquaculture activities.

The administrative structure of Kaduna State consists of the State Executive Council,—which is composed of the state governor as the chairman, deputy governor, commissioners of ministries and the departments and agencies under them—the Legislature and the Judiciary. There are 23 Local Government Areas (LGAs) under the leadership of the Local Government Chairpersons. The majority of the state's residents live in rural areas, semi-urban and urban towns.

### **The Kaduna State Government programs for agriculture under the Agriculture Promotion Policy**

In the bid to boost agriculture, the state government is committed to making agriculture an all-year-round occupation. To support this goal, the government is committed to constructing new dams, rehabilitating the existing state-owned irrigation schemes and establishing new schemes to utilize the 80,000 ha of fadama lowlands (KSMOAF, 2016). This effort will not only increase food production, but also provide job opportunities to farmers and reduce rural urban migration during the season when there are less on-farm activities.

There are several government programs and partnerships geared toward supporting agricultural productivity. One is the Alliance for Green Revolution in Africa (AGRA). AGRA is anchored by the Kaduna Agricultural Development Agency (KADA) with innovation, extension and technology provided to farmers alongside inputs such as seeds, fertilizers and agro-chemicals (KADA, 2017).

The second program is the Growth Enhancement Support Scheme (GES) of the federal government through the KADA, where inputs are given to support farmers at subsidized prices.

The third program is the LAKAJI (LAGos-KANo-JIbiya) Corridor Project transport system. It targets nine states—Lagos, Ogun, Oyo, Kwara, Niger, Kogi, Kaduna, Kano, Katsina—and the Jibiya route, and it runs from the port of Lagos in the southern part of Nigeria through the commercial center of Kano and ends in Jibiya at the border with Niger. The LAKAJI Corridor has a number of special economic zones designed to promote agribusiness (notably the Staple Crop Processing Zones, major water retention and irrigation schemes and several large grain storage facilities) (KADA, 2017). This transport route system encourages the establishment of production and processing centers along the corridor to benefit from proximity to dense urban population centers that provide end markets for domestic goods, as well as the human resources for engagement in value addition. Factors limiting the realization of the corridor's potential are major infrastructure deficiencies, particularly the poor condition of secondary roads in two of the most fertile states with the most available arable land, Niger and Kwara.

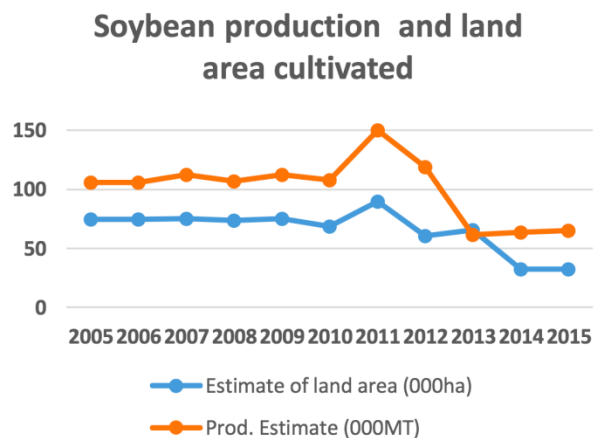
There are several state government initiatives to support agriculture as a business and to create an atmosphere more conducive to business in general. For example, the Kaduna Investment Promotion Agency is responsible for improving the ease of doing business for private investors or those engaging in Public Private Partnerships.

### **Soybeans in Kaduna State**

One of the current administration's priority crops is soybeans. According to a 2007 study conducted by the Agricultural Media Resources and Extension Centre (AMREC), the major soybean producing states in Nigeria are Benue, Kaduna, Taraba, Plateau and Niger (AMREC, 2007).

Figure 2 depicts that soybean production and land area in Kaduna State both declined from 2005 levels to 2015 levels.

Figure 2



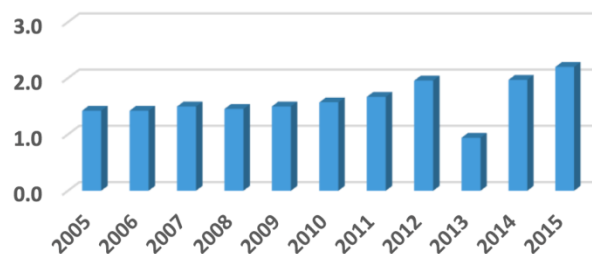
Source: Kaduna State Agricultural Development Agency, 2017

Soybean production increased in the state from 100,000 metric tons (MT) to about 150,000 MT in 2011 and then decreased to 120,000 MT in 2012. In 2012 and 2013, there was a decrease in production and land area due to the introduction of the GES in 2012, which shifted farmers' interest to maize and rice. However, soybean production has been maintained since 2013, and this is partly due to increased soybean yields.

Figure 3 demonstrates that soybean yields increased between 2010 and 2015 (with a dip in 2013). Prior to 2010, the average yield in Kaduna State was slightly below the national average of 1.4 MT/ha, typically ranging between 1 and 1.5 MT/ha between 2005 and 2011. However, since 2010 (with the exception of 2013), soybean yields have been increasing. Particularly in 2014 and 2015, the state saw an increase in its average yield to about 2 MT/ha, which is an appreciable improvement, though still lower than other major soybean producers such as the U.S.A., Brazil and Argentina.

Figure 3

### Soyabean yield in Kaduna State



Source: Kaduna State Agricultural Development Agency 2017

### Explaining the recent gains in soybean productivity in Kaduna State

Though direct causal effect cannot be claimed without a thorough empirical analysis, anecdotal evidence points to several specific activities and programs around the state that are having a significant effect on the soybean subsector.

One such is the NII Africa program which seeks to improve the protein consumption of rural communities by enhancing the production of leguminous crops such as soybean. NII Africa trains farmers in good agricultural practices through on-farm trials and demonstration plots and through provision of improved varieties and use of inoculants to increase the nitrogen availability to plants.

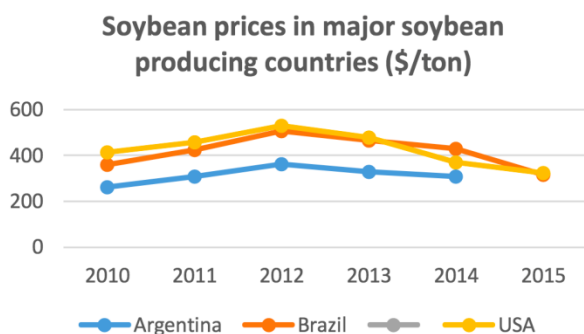
A second program is the Support to Agricultural Research for Development of Strategic Crops (SARD-SC), focused on increasing the productivity and income of farmers through improved linkages to input dealers, other service providers, financial institutions and other NGO's (KADA, 2017). SARD-SC conducts trials on farms for maize and soybean and assists in improving farmers' access to improved varieties and inoculants as well. It is a program supported by the African Development Bank through the International Institute of Tropical Agriculture

(IITA), Institute for Agricultural Research (IAR), National Agricultural Extension and Research Liaison Services (NAERLS) and KADA.

A third program in Kaduna State is the Anchor Borrowers Program (focused on soybeans, maize, rice, sorghum and ginger), meant to empower farmers with improved access to credit. Farmers were given inputs—such as fertilizers, seeds, agro-chemicals and cash—for production. An interest rate of 9% per year was waived by the state government, and 2,297 soybean farmers have participated in the program (KADA, 2017).

While soybean prices in key soybean producing countries have been on a general decline since 2012 (see Figure 4), prices in key soybean producing areas in Nigeria have been increasing. The prices in key production areas of Kaduna State have increased more than three-fold from less than N100 per measure to over N300 per measure (Figure 5).

Figure 4

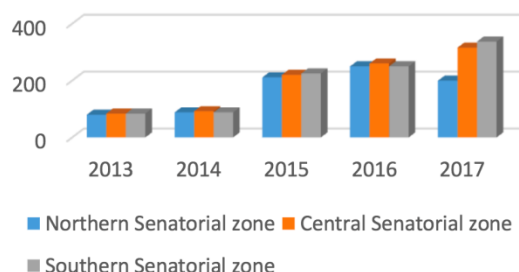


Source: Authors from FAOStat

Part of the reason for the rise in soybean prices is the increasing demand for the product to meet growth in the poultry and other industries. Falke Industries Limited is a Nigerian-owned company that operates along Kaduna-Zaria expressway in the state. With their proximity to the source of raw materials, they provide soybean oil and meal to their customers year round (KADA, 2017). This stimulates backward linkages through the market they provide to soybean farmers.

Figure 5

### Soybean prices in key soybean producing areas in Kaduna state (Naira/measure(1.8kg))



Source: Data from Kaduna State Agricultural Development Agency

Consequently, the recent growth in soybean yields appears to be driven by improved incentives (partly due to higher prices) likely to encourage investments in the household soybean enterprise alongside several programs targeted at the product.

### Challenges to soybean productivity growth

Despite the positive results in the soybean yields and prices, there are several challenges to soybean productivity growth in the state. They can be considered under broad categories of production, processing and marketing.

**Production challenges** center around the levels of exposure and dissemination of information about the use of improved varieties. Extension agents are inadequate in the state. The ratio is 1 extension agent for every 4,750 farmers (KADA, 2017).

The farmer vs. pastoralist conflict remains a critical issue in Kaduna State. If not addressed, it will increase the riskiness of agricultural investments and affect farmers' willingness to invest.

Finally, while the Anchor Borrowers Program and similar programs should be applauded, funds to finance agricultural investments for farmers in the state remain inadequate.

**Processing challenges** include the need to expand smallholder engagement in processing. This is partly due to lack of small technologies for farm-gate value addition and the low efficiency of processing enterprises.

**Marketing challenges** include the relatively weak linkages between actors in the chain to deliver soybean to industrial processors. While significant efforts have been made to improve farmer links to input and output markets, poor access to markets, an information gap and the deplorable state of rural feeder roads, leading to unnecessarily high transportation costs, remain challenges for smallholder farmers in rural areas.

### **Sustaining and improving soybean productivity growth in Kaduna State**

The Kaduna State Government needs to further intensify its efforts to maintain and improve soybean productivity. Innovative ways to further collaborate with financial institutions (such as the Bank of Agriculture) and increased rural farmer access to credit are important. There is the need for the extension to farmer ratio to be reduced, and a need to increase the spread of new technologies and management practices while maintaining and strengthening links with institutions such as the IAR for information on modern technologies.

There is also need for more collaboration between the state government and farmers in ways that open up local and international markets for small holders. The state needs to demonstrate that it is ready for business and ready to encourage private sector investment in soybean processing and value addition. This will further create market opportunities for rural farmers by providing incentives to invest in technologies and practices in their soybean enterprises. It is also recommended that government encourages and supports the popularization of soybean recipes to stimulate local demand.

### **Conclusion and key recommendations**

This note leverages on data on soybean (one priority crop for the state) policy documents and data from the FAO to link evidence from available data to ongoing government programs and policies.

The state has seen an increase in soybean yields since 2010. This has occurred alongside increased soybean prices in major production zones in the state and amidst numerous state-driven programs focused on the crop. Improving access to technologies through strengthened extension services and lower extension-to-farmer ratios are key to maximizing the reach of numerous technologies and management practices that have been developed for the crop. Further support to infrastructure development in order to reduce transportation costs and the effective price of inputs while increasing farm-gate prices of rural farmers are also important. Current efforts of Kaduna State demonstrate that it is ready for business and ready to encourage the private sector to invest particularly in value addition in agriculture. All this is likely to have backward linkage effects on rural farmers, encouraging them to invest in soybean enterprises and maintain and possibly improve soybean production.

This note reveals the importance of data for policy making and also demonstrates the need for research targeted at soybean production, processing and marketing to be able to make more confident evidence-based links between farmer behavior and government policy.

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