



Central Bank of Kenya

Agriculture Sector Survey

November 2022



TABLE OF CONTENTS

1.	BACKGROUND.....	1
2.	METHODOLOGICAL FRAMEWORK.....	1
3.	MAIN HIGHLIGHTS FROM THE SURVEY	2
3.1	PRICES OF KEY AGRICULTURAL COMMODITIES AND THEIR EXPECTATIONS.....	2
3.2	EXPECTATIONS OF CHANGES IN AGRICULTURAL SUPPLIES AND PRICES	4
3.3	PRODUCTIVITY IN AGRICULTURAL PRODUCTION	4
3.4	USE OF FARM INPUTS IN AGRICULTURAL PRODUCTION	5
3.5	MARKET SUPPLY EXPECTATIONS	6
3.6	FACTORS AFFECTING AGRICULTURAL PRODUCTION	7
4.	CHALLENGES FACING THE AGRICULTURE SECTOR.....	9
5.	PROPOSALS TO IMPROVE THE AGRICULTURE SECTOR.....	9
6.	CONCLUSION.....	9

1. BACKGROUND

The agriculture sector continues to play a critical role in Kenya accounting for 20 percent of Gross Domestic Product (GDP) and 27 percent indirectly through its linkages with other sectors. The sector also employs over 40 percent of the total population and more than 70 percent of the rural populace. Given the critical role the sector plays in providing livelihoods and a food basket for the Kenyan economy, it is increasingly important to ensure that quality high frequency data is available to inform the food supply situation in the country, the prevailing prices and the challenges that may affect agricultural production. Towards this end, the Central Bank of Kenya (CBK) introduced the Survey of agriculture sector in July 2022 to complement the CEOs and Market Perceptions Surveys. This survey is aimed at generating high frequency agriculture sector data to provide additional information to support monetary policy decision process.

The Economic Survey (2022) reported a deceleration in the growth performance of the agriculture sector from 5.2 percent in 2020 to a contraction of 0.1 percent in 2021 on account of unfavorable weather conditions that led to a reduction in both crops and livestock performance. Maize production decreased from 42.1 million bags in 2020 to 36.7 million bags in 2021. A similar trend was reported for beans, coffee, wheat and tea. The reduced production was attributed to rising cost of farm inputs, leaf lust infestation and shift in land use from agriculture to real estate development. In the first and second quarters of 2022, the sector contracted further by 0.7 percent and 2.1 percent, respectively. Understanding the trends in the prices of agricultural commodities and the sector's output is critical given the significant weight of food in the CPI basket, and important role of agriculture in the economy. Moreover, given the high reliance on rain-fed farming, farmers are increasingly vulnerable to drought and unpredictable weather patterns due to climate change.

The November 2022 Agriculture Sector Survey aimed at obtaining indicative information on the recent trends in prices and output of agricultural commodities in various markets and farms across

the country. The Survey also provides an indication of the availability/supply of key food commodities in the country.

The main focus areas of the survey included:

- i. Prices of key agricultural commodities and their expectations;
- ii. Agricultural output, acreage, and expectations;
- iii. Use of farm inputs in agricultural production;
- iv. Factors affecting agricultural production; and
- v. Proposals to improve agricultural production.

The Survey was conducted at a time when COVID-19 positivity rate is low, the economy fully reopened, uncertainties linked to the pandemic significantly reduced, and the ban on maize imports from Uganda and Tanzania lifted. The war in Ukraine impacted negatively on wheat prices globally, but the prices have started to moderate with the recent lifting of the blockade on wheat exports from Ukraine and a decline in oil prices.

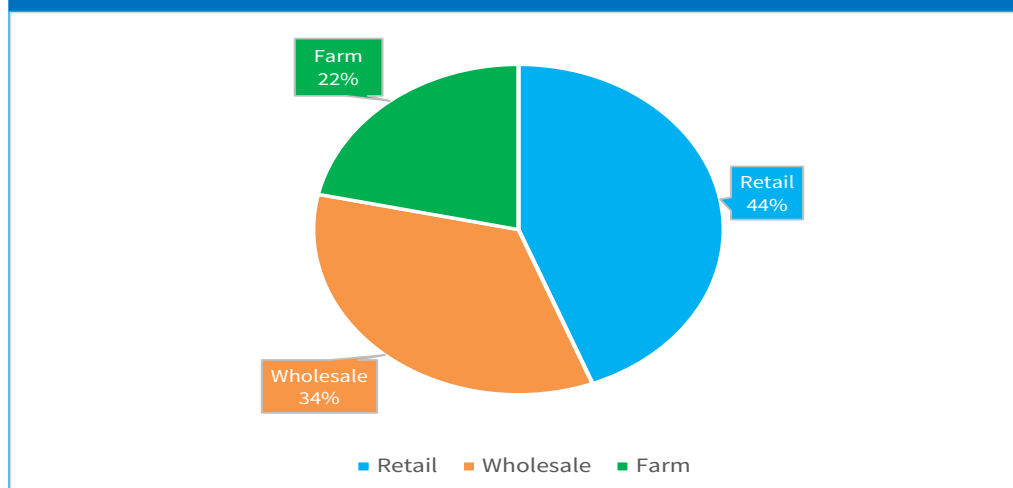
2. METHODOLOGICAL FRAMEWORK

The Survey conducted between November 7 and 10, 2022 drew respondents from wholesale markets, retail markets, and farms in major towns across the country. These included: Nairobi, Nairobi Metropolitan area, Naivasha, Gilgil, Nakuru, Narok, Bomet, Nyandarua, Nyahururu, Kisumu, Mombasa, Kisii, Eldoret, Kitale, Meru and Nyeri.

The scope of the Survey was expanded to cover the recently introduced government subsidy on fertilizer. The coverage and scope are expected to expand in future as more data become available.

Researchers made physical visits to markets and farms where personalized interviews were conducted in major towns. The survey obtained 100 percent response rate as summarized in **Figure 1**. Retail markets took the biggest share in the survey of agriculture prices accounting for 44 percent of the sampled markets.

Figure 1: Response Rate (percent)



3. MAIN HIGHLIGHTS FROM THE SURVEY

This section highlights the key findings from the November 2022 Survey. Broadly, the following are the key highlights of the survey:

- i.) Prices of key food items expected to decline or remain unchanged in November and December 2022;
- ii.) Transport costs, input prices and weather conditions continue to impact retail prices while supply chain disruptions also have a big impact on farming;
- iii.) Over 81 percent of farmers expect output of key food items to increase or remain the same in the next harvest up from 60 and 78 percent in July and September respectively;
- iv.) Most farmers employ a combination of inputs for farming with use of inorganic fertilizer and manure ranking highest;

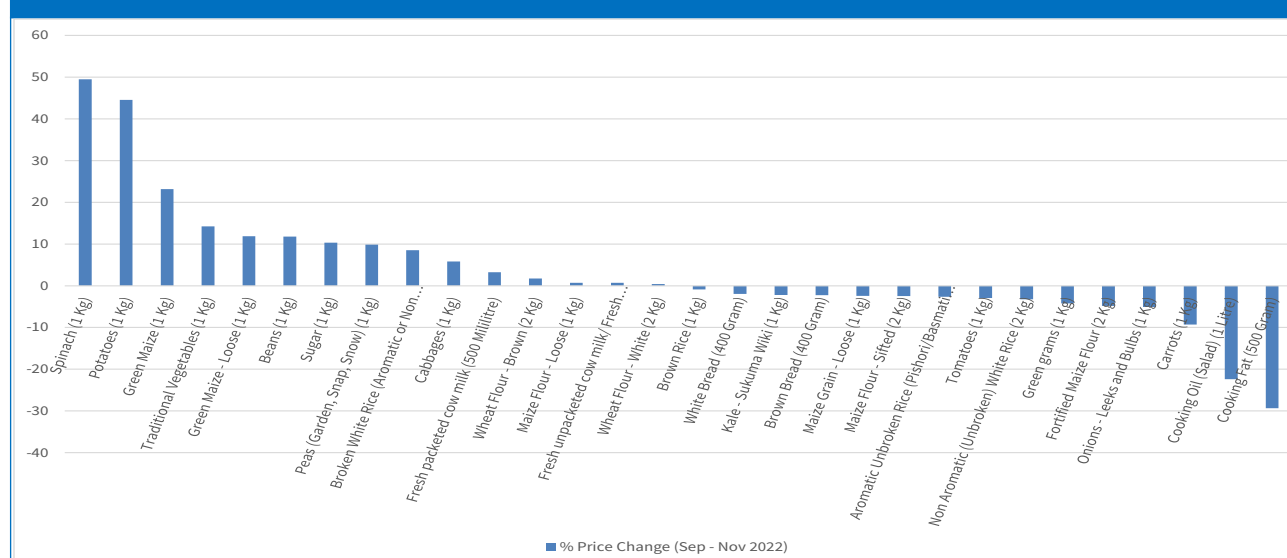
- v.) Only 20 percent of sampled farms reported having accessed the subsidized fertilizer; and
- vi.) Nearly all farmers practice rainfed agriculture reflecting their vulnerability to harsh climatic conditions.

The survey looked at the changes in prices in both wholesale and retail markets, expectations about changes in the prices and factors that affect the traders.

3.1 Prices of Key Agricultural Commodities and their Expectations

The Survey sought to determine changes in prices of key agricultural commodities between September and November 2022. Mixed trends were observed in the three markets as shown in (Figure 2).

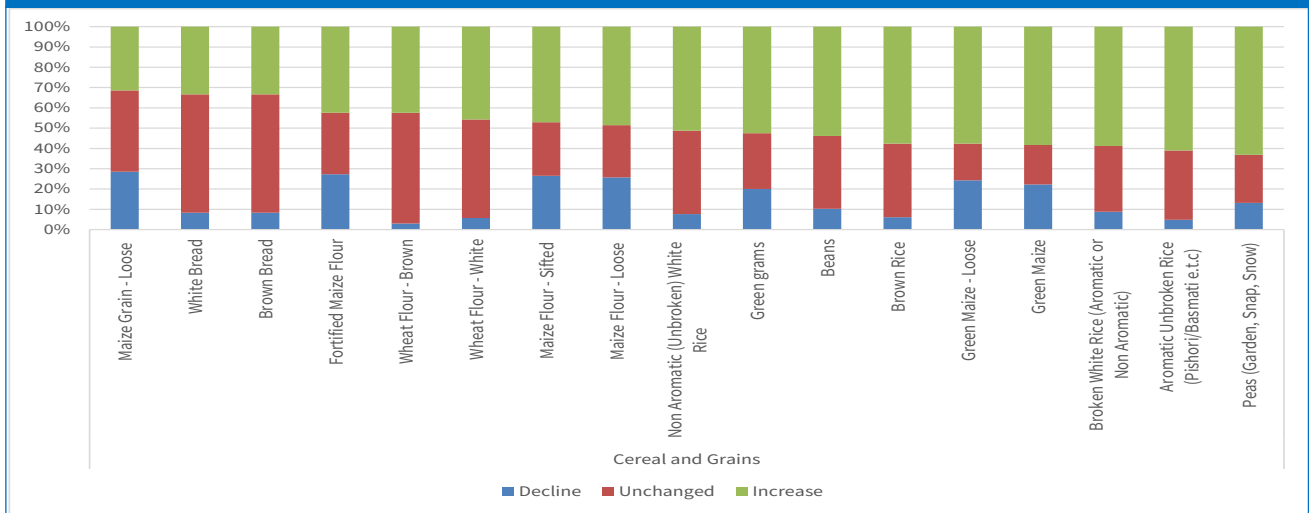
Figure 2: Changes in Wholesale Prices of Key Food Items (percent)



The analysis of retail prices between September and November 2022 revealed a moderation in prices of key agricultural commodities, notably maize and edible oils. This was on account of improved weather conditions that supported the vegetable season and the increased supply of maize and wheat during the ongoing harvest season. The price of wheat moderated in line with declining international wheat

prices. However, the prices of spinach, potatoes, green maize, beans, sugar, peas, rice, cabbages, and milk remained elevated due to low production (Figure 2). The selected items are being tracked from September 2022 to inform the direction and magnitude of price movements. Figures 3 and 4 present the retail price expectations for December 2022.

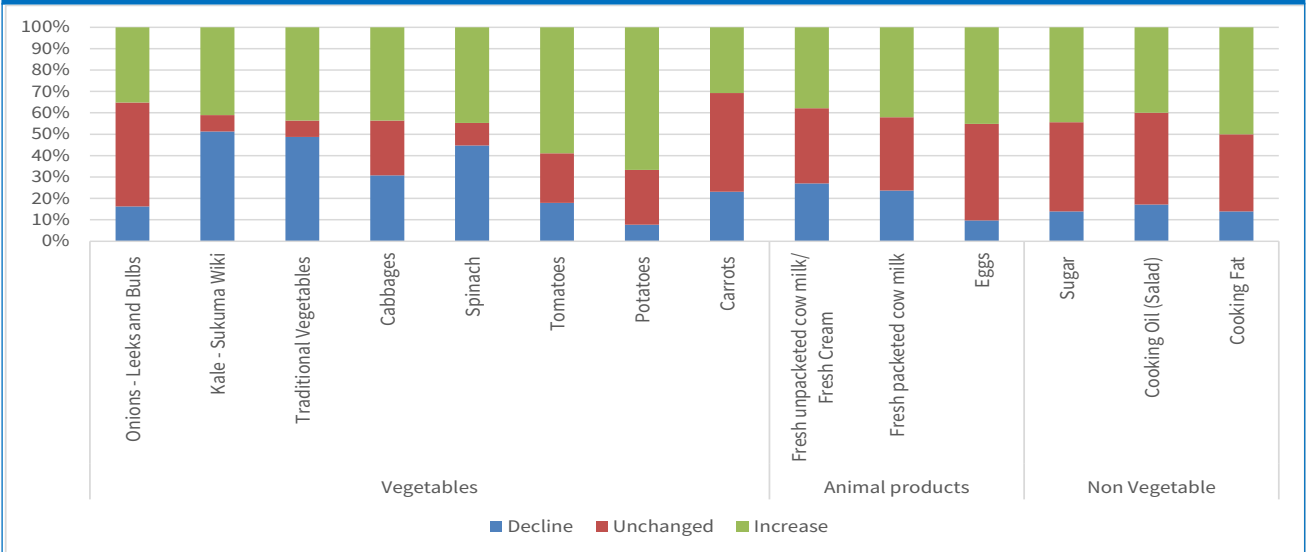
Figure 3: Retail Price Expectations for Cereals and Grains in December 2022



Grain and flour prices are expected to remain the same or decline in December 2022. A majority of respondents (69 percent) expect retail prices of the identified agricultural commodities to either decline or remain unchanged up from 62 percent in September the respondents indicated that the continued maize and wheat harvest in Kenya and Tanzania has helped to moderate prices of maize

grain, wheat, and their finished products such as flour and bread. However, the price of green maize was expected to rise due to limited supply in December as the maize harvest season comes to an end. The price of rice is also expected to rise due to low production occasioned by limited rainfall and the looming demand from the festive season.

Figure 4: Retail Price Expectations for Vegetables, Non-Vegetables and Animal Products in November 2022



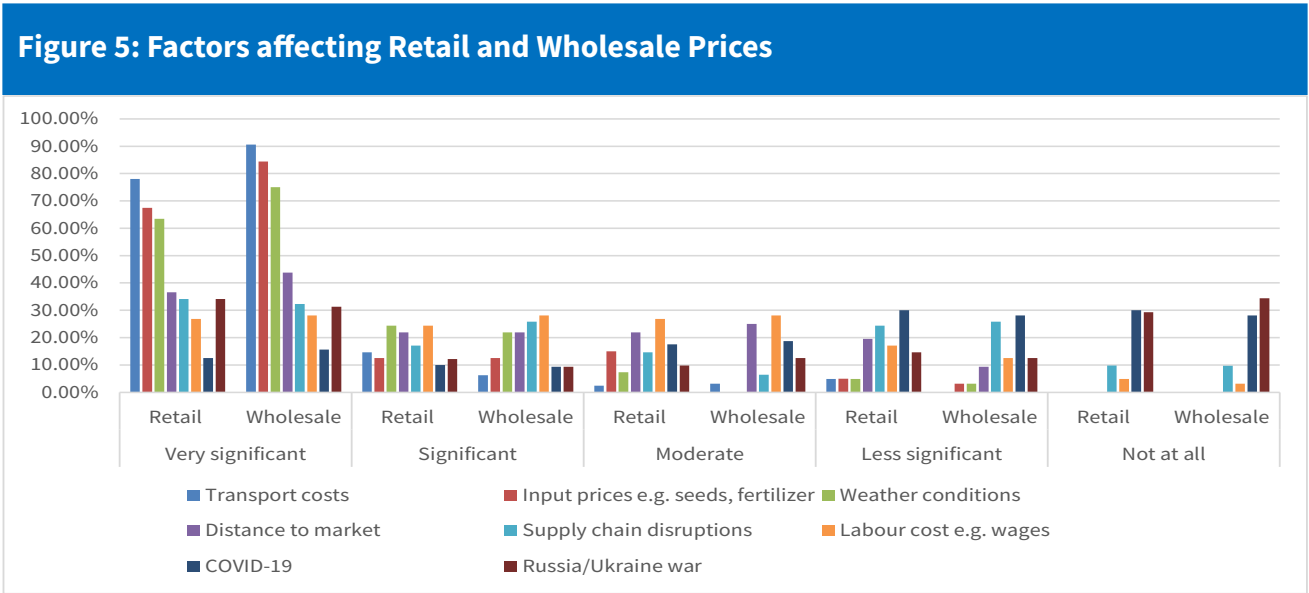
Vegetable prices are expected to remain the same or decline in December 2022 except for tomatoes and potatoes as the short rains continue across the country. The price of animal products is also expected to decline or remain unchanged as more pasture for the livestock becomes available with the rains. The price of cooking oil is also expected to decline further or remain the same in line with international trends.

3.2 Factors affecting Retail and Wholesale Prices

To understand the issues faced by retail and wholesale traders in the markets, the survey

posed questions on the factors that affect the traders in different markets across the country. This is summarized in **(Figure 5)**.

Transport costs, input prices and weather conditions accounted for over 50 percent of the factors that were very significant in agricultural production. The impact of COVID-19 is ranked low and is no longer an issue as the economy is now fully open and there are no further restrictions to movement following the full reopening of the economy and lifting of travel restrictions. The ongoing war in Ukraine however perceived to continue impacting retail and wholesale markets.



Analysis of output

This section investigates the performance of the agriculture sector using output analysis. This is done by first analyzing the productivity of the sector using the yields per acre for various agricultural commodities. The yields are derived by dividing the actual output per acre with acreage under cultivation. This is followed by an analysis of the degree to which farmers embrace different farm inputs including the subsidized fertilizer, market supply expectations, and factors and challenges affecting agricultural production.

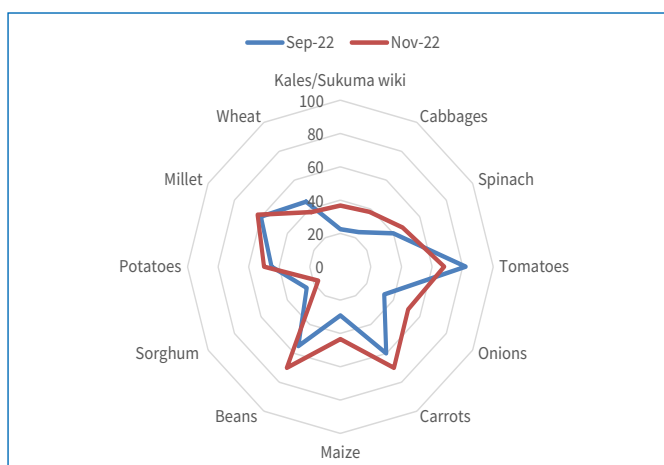
3.3 Productivity in Agricultural Production

To inform productivity of the agriculture sector,

use of yields per acre is often recommended. This helps in establishing the variance between the actual level of output from its potential. In this Survey, the farmer estimation approach was applied with farmers being asked to provide estimates of the total crop harvested. This value was divided by the size of the cultivated land measured in acreage or hectares to obtain the yields (level of output per unit of land area).

Yields for seasonal crops are computed at the end of the cropping season during harvest while for continuous crops, the computation should be done regularly to accommodate both wet and dry seasons from which an average yield per acre can be computed more accurately. **Figure 6** presents the average yields per acre for selected food crops in the current planting cycle.

Figure 6: Yields per Acre (Percent)



The Survey established that yields for all the sampled food crops fell below the potential in the season to November 2022. Tomatoes, carrots, and beans continue to produce relatively higher yields per acre as compared to other agricultural commodities.

The yields per acre however vary depending on the season, rising during the peak season. Factors that could trigger an increase in yields per acre include:

- Improved weather conditions
- Optimal combination of agriculture inputs such as fertilizer, quality seeds, pesticides etc.

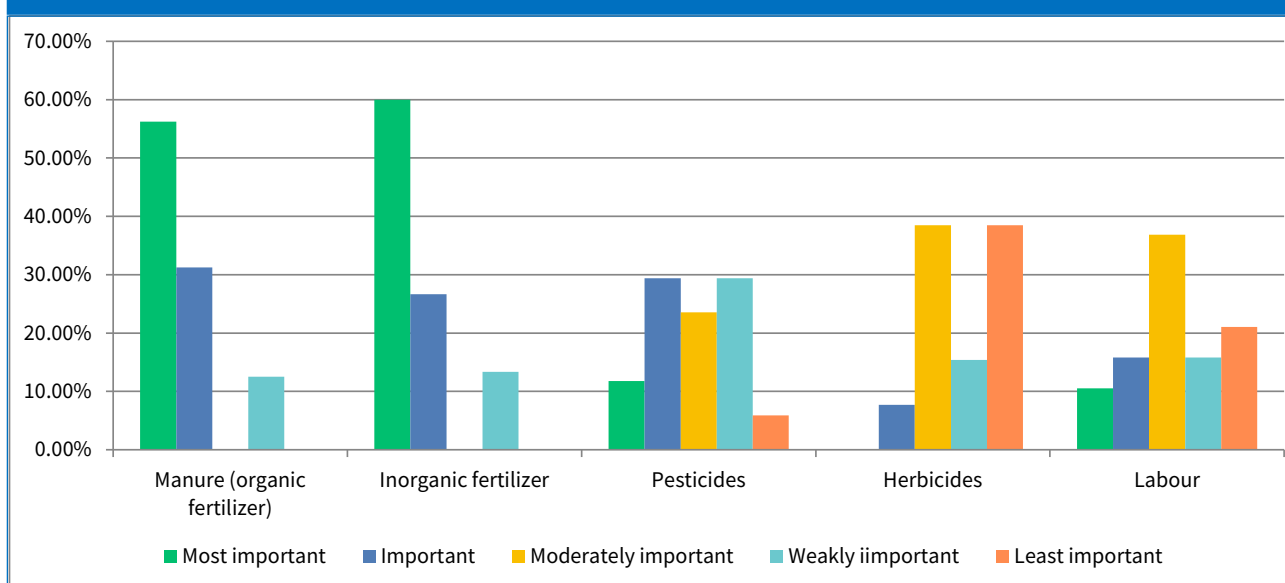
The yields will be tracked in subsequent surveys to bring out changes over time.

3.4 Use of Farm inputs in Agricultural Production

Optimal combination of farm inputs in agricultural production is critical in enhancing farm yields especially for the Kenyan economy whose mainstay is agriculture. Use of farm inputs that embody modern technology such as improved seeds, fertilizers, agro-chemicals, farm implements and irrigation for example has potential to increase the level of output

and reduce poverty for the masses who rely on agriculture. Unfortunately, access to and utilization of farm inputs is beyond the reach of most farmers due to the associated costs. The Survey established that farmers employed an array of farm inputs ranging from manure, fertilizer, chemicals, equipment, seeds, water among others to raise output **Figure 7**.

Figure 7: Significance of farm inputs in agricultural production

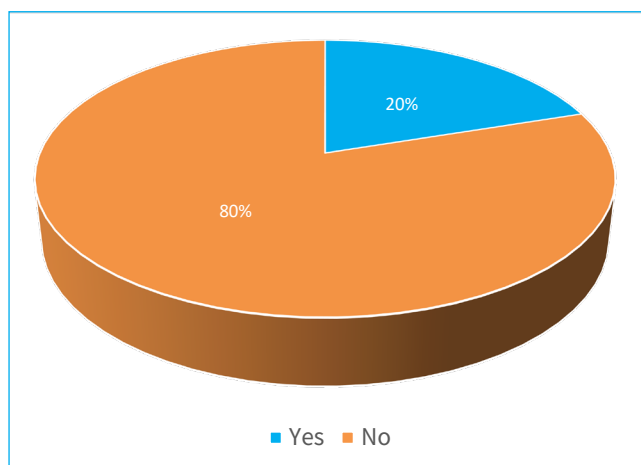


The use of inorganic fertilizer and manure ranked highest among the farm inputs. The use of herbicides, however, remains relatively low at 40 percent. Other challenges constraining use of include high input costs e.g. seeds, fertilizer, toxic herbicides due to lack of proper soil analysis, unavailability of crop specific fertilizer, lack of certified seeds and clean seeds particularly potatoes among others. Respondents indicated

that the uptake of these farm inputs could be revitalized by the introduction of government's agricultural input subsidy schemes such as the recent one on fertilizer prices.

Although the uptake of farm inputs appears to be relatively high in absolute terms, the distribution across the country remains unbalanced.

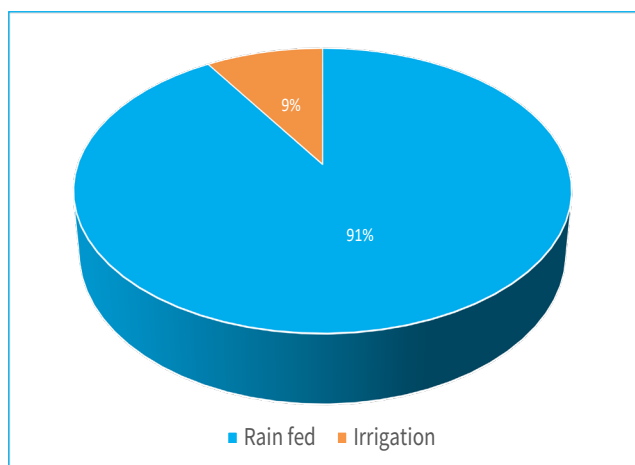
Figure 8a: Access to subsidized fertilizer



Only 20 percent of sampled respondents have accessed the subsidized fertilizer. While the supply of subsidized fertilizer was reported in most parts of the country, access remains a challenge.

Most of those with access expect their output to increase by between 10 and 20 percent although this would depend on the rain availability given that over 90 percent depend on rain to grow their crops. Farmers and traders recommended the use of last mile approach in distribution of fertilizer by stocking the same in agrovet. The high reliance on rain by farmers reflect their vulnerability to climate change (**Figure 8a** and **8b**).

Figure 8b: Main water source for farming



3.5 Market Supply Expectations

The survey sought to find out the expected changes in output and acreage in November and December 2022. **Figure 9** and **10** provides a summary of expected changes .

Over 81 percent of farmers expect output of key food items to increase or remain the same in the next harvest up from 60 and 78 percent in July and September, respectively, on account of improved weather conditions and increased acreage per food crop. Supply of maize products is expected to improve with the harvest season in source regions such as Kitale, Narok and Uasin Gishu.

Figure 9: Market Supply Expectations in December 2022

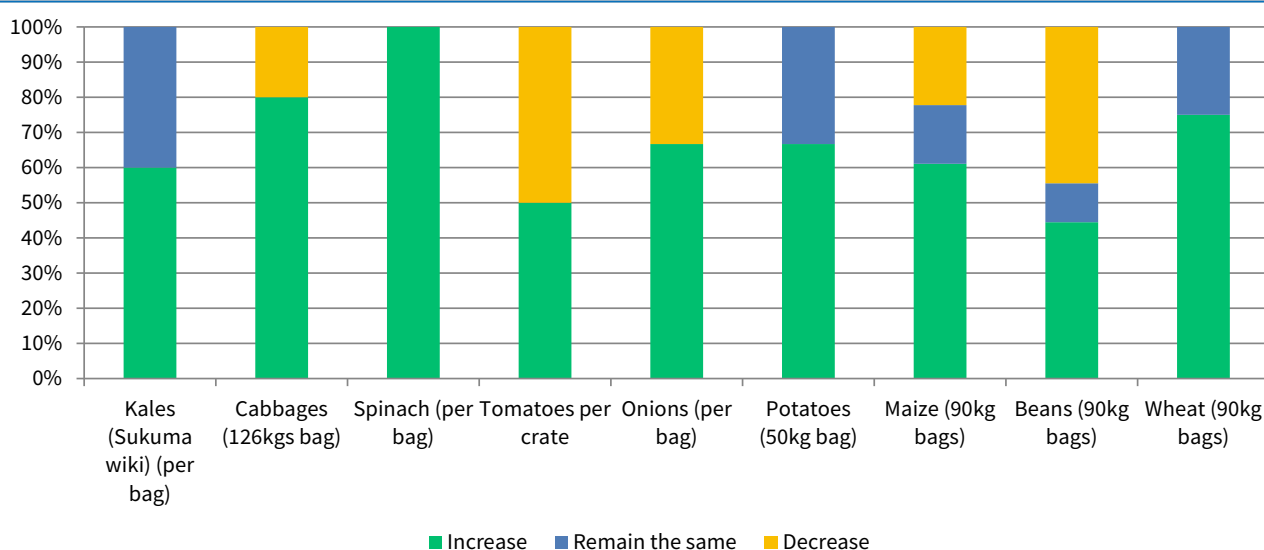
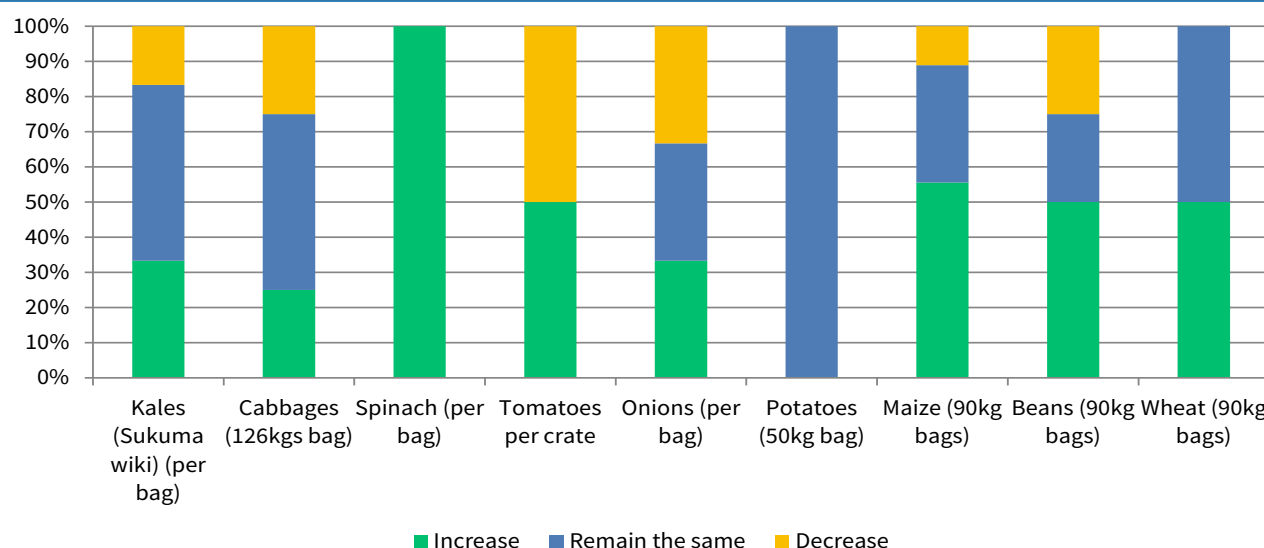


Figure 10: Acreage Expectations in December 2022



The ongoing rains are expected to boost fast growing food items mainly vegetables. However, the rains may negatively affect the tomato harvests.

Most farmers expect the area dedicated to agricultural production to significantly increase the next season. The increased acreage is on account of improved weather, reduced input prices and the start of the short rains which has potential to increase yields.

Only tomato farmers expected a smaller area dedicated to farming which could be explained by the inverse relationship between extended rain and tomatoes.

3.6 Factors affecting Agricultural Production

Several factors including economic, biological, environmental, and technological affect the sector. A good understanding of the dynamics in agriculture sector is critical in unlocking its potential to enhance food security through increased yields and to stabilize the food prices.

Using a five- point Likert scale, the Survey sought answers on the factors that account for the observed changes in the prices and quantities of agricultural commodities (**Figure 11**).

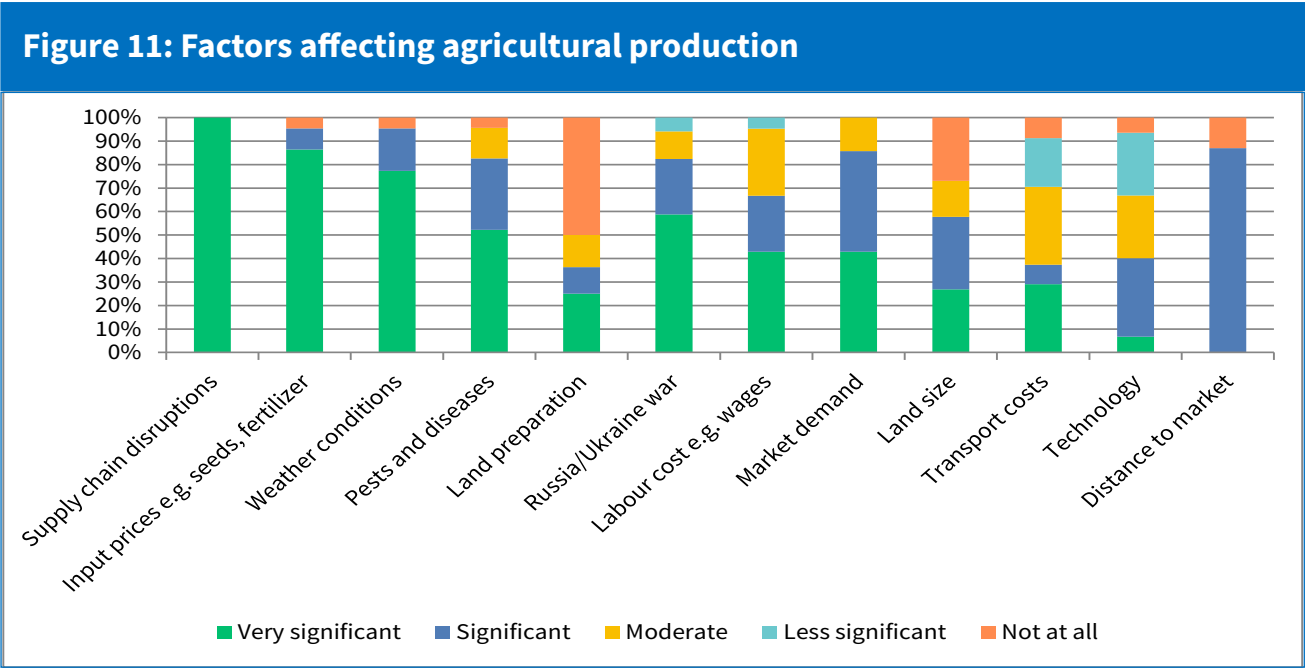
Supplychainconstraintsincludinghightransport costs, limited access to farm inputs, coupled with high input costs and weather conditions were found to be very significant in agricultural production. The same applies to war in Ukraine which has mainly limited fertilizer availability in Kenya given the role played by Russia as the world’s largest exporter of fertilizer. .

The Survey findings singled out transport costs, input prices and weather conditions as the main factors constraining agricultural production.

Transport costs, input prices and weather conditions accounted for over 40 percent of the factors that significantly affected agricultural production

The results further showed that COVID-19 was not a significant factor in explaining agricultural production as the economy is fully operational following the lifting of all restrictions to movement.

Market availability, proximity to markets and labour costs were also found to have a significant impact on agricultural production while land size, supply chain constraints and the war in Ukraine had a moderate effect. Technology played a less significant role probably on account of low adoption of technology in farming.



4. CHALLENGES FACING THE AGRICULTURE SECTOR

In addition to the factors that constrain agricultural production, the Survey sought responses from farmers on the main challenges experienced. The main challenges were quality and cost of farm inputs. In particular, the farmers cited the high cost of fertilizer, seeds, transport, marketing among others. Other key challenges identified included:

- Lack of funds to support agriculture
- Cartels in the production chain
- Unavailability of crop specific fertilizer
- Adverse weather conditions such as low and unpredictable rainfall patterns
- Infiltration/substandard inputs e.g seeds, fertilizer

5. PROPOSALS TO IMPROVE THE AGRICULTURE SECTOR

The Survey sought proposal on how market traders and farmers may want to see improvements to enhance agriculture production. Respondents highlighted that the recent reduction in fertilizer prices could lead to increased production and therefore lower agricultural commodity prices. Nonetheless, this government action could be supplemented by the following measures:

- i.) Elimination of cartels involved in fertilizer distribution and allocate more fertilizer to large scale farmers;
- ii.) Adoption of a last mile approach to devolve fertilizer subsidies to wards (Village level) e.g. making KFA/ NCPB master distributors who sell at a discount to private outlets (agrovets), who then sell to the local farmers;
- iii.) Introduction of a real time agriculture commodity

- market e.g. maize trading segment at the Nairobi Securities Exchange;
- iv.) Provision of concessionary loans to farmers to boost production;
 - v.) Reduction of cost of inputs e.g. fertilizer and seeds;
 - vi.) Sinking of boreholes and dams for irrigation to counter the adverse weather conditions
 - vii.) Use of appropriate technology to increase productivity;
 - viii.) Reduction of tax levies to support farming and market creation e.g The government should eliminate VAT on Electricity for large scale farmers who use irrigation systems to pump water and have electricity subsidized for them; and
 - ix.) Increasing the number of agriculture extension officers to support farmers.

6. CONCLUSION

The CBK conducted the third Survey of the agriculture sector from November 7 - 10, 2022 to obtain information on the recent trends in prices of agricultural commodities in various markets and farms across the country and the sector's output. The Survey focused on prices of key agricultural commodities, agricultural output, acreage and future expectations, determinants of agricultural production and proposals on how to improve agricultural production. The target respondents included: wholesale traders, retailers, and farmers in major towns.

The collated findings were drawn from 100 respondents covering Nairobi and the neighbouring counties including Kiambu, Kajiado and Machakos, Naivasha area, Nakuru, Narok, Bomet, Kisumu, Mombasa, Kisii, Eldoret, Kitale, Nyandarua,

Nyahururu, Meru and Nyeri. The Survey established mixed trends in wholesale, retail and farm prices and output for the selected commodities.

Key findings from the Survey were the following:

- i.) Retail prices of agricultural commodities are expected to remain largely the same, with a bias towards a decline. Specifically, a majority expect prices of maize, wheat, and edible oils to moderate in the near term.
- ii.) The area allocated to agricultural production is likely to increase in the next crop season.
- iii.) Transport costs, input prices and weather conditions are the main factors affecting agricultural production.
- iv.) Majority of farmers have not accessed the most recent fertilizer subsidy.

To enhance the agriculture sector and improve production, respondents recommended the following:

- i. Eliminate brokers involved in fertilizer distribution and allocate more fertilizer to large scale farmers;
- ii. Adopt a last mile approach to devolve fertilizer subsidies to wards (Village level);
- iii. Government to introduce minimum guarantee price for agricultural commodities;
- iv. Introduce a real time agriculture commodity market e.g. maize trading segment at the Nairobi Securities Exchange;

- v. Provide concessionary loans to farmers to boost production;
- vi. Reduce cost of inputs e.g. fertilizer and seeds;
- vii. Sink boreholes and dams for irrigation to counter the adverse weather conditions;
- viii. Reduce tax levies to support farming and market creation; and
- ix. Increase the number of agriculture extension officers to support farmers.

The farmers commended the Government for the recent reduction in fertilizer prices as it would lead to increased production and therefore lower commodity prices.



Central Bank of Kenya

Haile Selassie Avenue P.O. Box 60000 - 00200 Nairobi | Tel: (+254) 20 - 286 0000 / 286 1000 / 286 3000