Central Bank of Kenya

Agriculture Sector Survey

November 2023

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1. BACKGROUND

The agriculture sector continues to play a critical role in Kenya accounting for about 20 percent of Gross Domestic Product (GDP). The sector also accounts for over 40 percent of the total employment and more than 70 percent of employment for the rural populace. This is in addition to being a key driver of the manufacturing sector through agro-processing. The sector plays a critical role in providing livelihoods, promoting food security, and stabilizing inflation given the weight of food commodities in the Consumer Price Index (CPI). It is, therefore, increasingly important to ensure that high frequency data is available to inform analysis of prevailing prices of key food items and their expectations, as well as the factors that affect production, marketing of farm produce and price volatility. To this end, the Central Bank of Kenya (CBK) introduced the Agriculture Sector Survey in July 2022 to complement the CEOs and Market Perceptions Surveys.

The Survey is aimed at generating high frequency indicative agriculture sector data on food commodities in select markets to inform inflation projections and provide additional information to support monetary policy decision making process. Understanding the trends in the prices of basic agricultural commodities and the sector's output is critical, given the significant weight of food in the CPI basket, and the 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. These have implications not only on food security but also price stability.

The Economic Survey (2023) reported a contraction of 1.6 percent in growth of the agriculture sector in 2022 from -0.4 percent in 2021 , on account of a widespread drought that led to a reduction in both crop and livestock performance. Maize production decreased from 42.1 million bags in 2020 to 36.7 million bags in 2021 and 34.3 million bags in 2022. A similar trend was reported for beans, coffee, wheat, and tea. However, the agriculture sector rebounded to a growth of 7.7 percent in 2023Q2, supported by the favourable weather conditions experienced across the country.

The November 2023 Agriculture Sector Survey aimed at obtaining indicative information on the recent trends in prices and output of key food commodities in select markets and farms to inform analysis of inflation developments and expectations. The Survey also provided indications of the availability/supply of key food commodities in the surveyed regions.

The focus areas of the survey included:

i. Prices of key agricultural food commodities and their expectations.
ii. Assessment of output and acreage of select food items, and their expectations.
iii. Access and use of farm inputs for agricultural production.
iv. Factors affecting agricultural production and marketing/sale of farm produce.
v. Indicative information on access to credit facilities by farmers; and
vi. Views on how to improve agricultural production.

The Survey was conducted during the short rain season, between November 13 and 17, 2023. The results revealed a general decline in the prices of key cereals and most vegetable items, following improved weather conditions. However, the prices of tomatoes and onions remained high partly on account of seasonal patterns. Additionally, the survey revealed a slight dip in the uptake of the government subsidized fertilizer which stood at 56 percent of the sampled farmers on account of seasonality factors. High transport costs and input prices continued to impact output and prices of key food items, while improved weather conditions supported increased production.

2. METHODOLOGICAL FRAMEWORK

The November 2023 Survey assessed changes in both wholesale and retail prices of key food items, expectations about changes in prices and output, and factors that affect agricultural production. The survey drew respondents from select wholesale and retail markets, and farms in major towns. These included Nairobi, Nairobi Metropolitan area, Naivasha, Gilgil, Nakuru, Narok, Bomet, Nyandarua, Nyahururu, Kisumu, Mombasa, Kisii, Eldoret, Kitale, Meru, Mwea, Machakos, Isebania, Nyeri, Molo, Kericho, Isiolo, Oloitoktok, Namanga and Makueni.
Both quantitative and qualitative approaches were employed to analyze the cross-sectional data while findings were presented using tables and charts. The Balance of Opinion (BOO) approach which is generally defined as the difference between the proportion of respondents having expressed a positive opinion and the proportion of respondents

having expressed a negative opinion divided by the total number of respondents was applied to convert qualitative responses into quantifiable values.

Farmers often use estimates of output and acreage to determine the productivity (yields) of crops in their farms. This approach requires farmers to provide estimates of the total crop harvested in each month/season as well as the area under cultivation. The actual output is then divided by the area under cultivation to produce the level of productivity (yields). Yields for seasonal crops are computed at the end of the cropping season during harvest while for continuous crops, the computation is done regularly to accommodate both wet and dry seasons from which an average yield per acre can be computed more accurately. The coverage and scope of the survey has continued to expand with time. The data was collected using face to face interviews with traders and farmers in select markets and farms. Farms accounted for 42.1 percent of the responses, 45 percent of them being large scale farms. (**Figure 1**).

Figure 1a: Respondents (Percent)

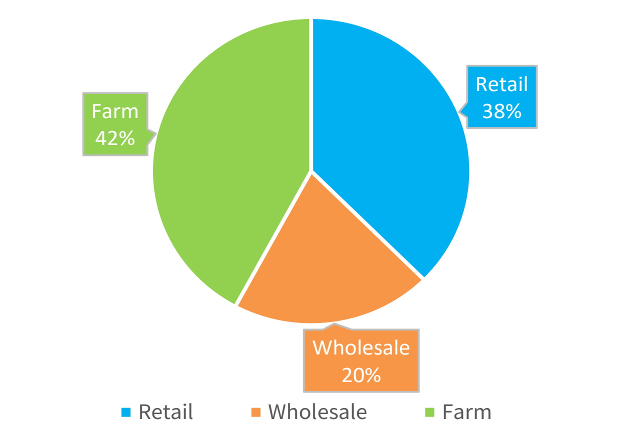
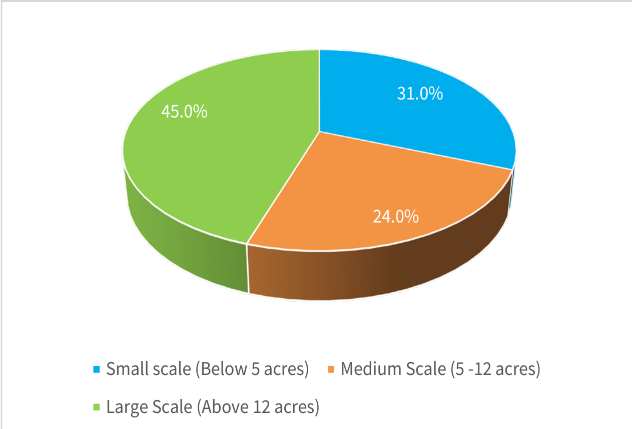


Figure 1b: Farm Categorization (Percent)



3. MAIN HIGHLIGHTS FROM THE SURVEY

This section highlights the key findings from the November 2023 Survey. Broadly, the following are the key highlights and recommendations:

i. Retail prices of most vegetables and non-vegetables declined in November and are expected to decline further in December

ii. Most respondents expect price of manufactured and processed consumer goods to increase in the near term on account of elevated energy costs.

iii. Expectations about higher output of key food items in the next harvest and acreage for cultivation remain positive. This is expected given the favourable long-rain season March-May 2023 and above-average rainfall across the country during the October-December 2023 short rain season.

iv. Weather conditions, transport and input costs continue to impact both output and price of key food items.

v. Access to government subsidized fertilizer averaged 56 percent in November 2023 relative to 69 percent in September 2023, mainly due to seasonality factors.

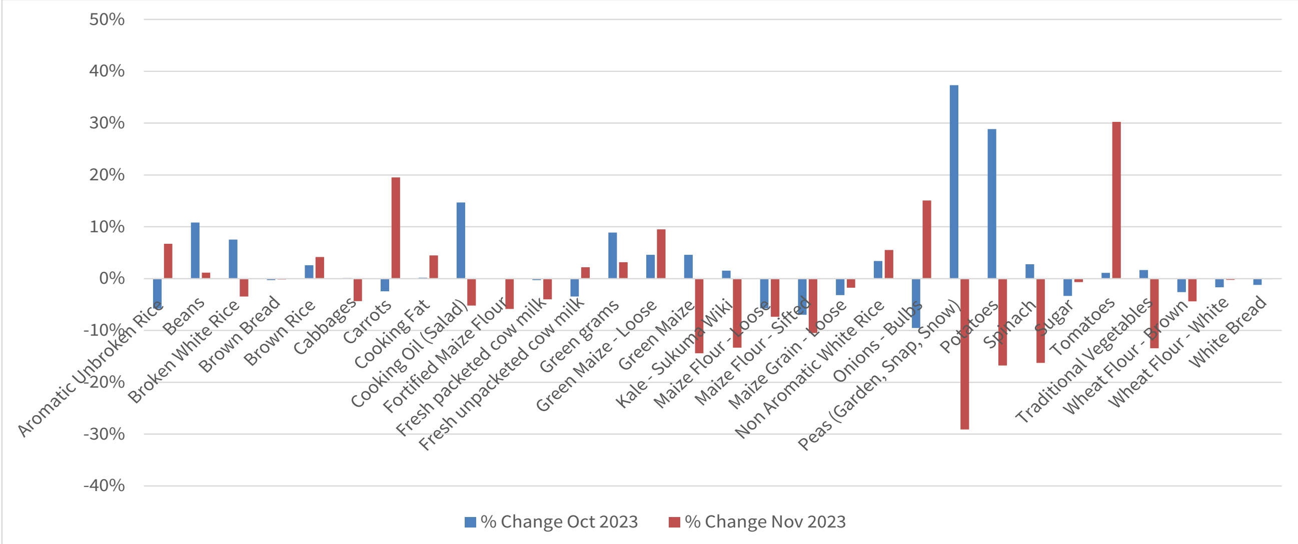
vi. Banks, friends/family, digital loans and the Hustler Fund were the main sources of credit for farmers in the current crop season. The funds were used mainly to finance farm implements, inputs and labor.

vii. Optimism regarding the possibility of higher economic growth moderated in November.

3.1 Prices of Key Agricultural Commodities and their Expectations

The survey sought to establish indicative month-on-month changes in prices of key agricultural commodities between October and November 2023. Mixed trends were observed in the retail markets (**Figure 2**).

Figure 2: Month on Month changes in Retail Prices of select Food Items (Percent)



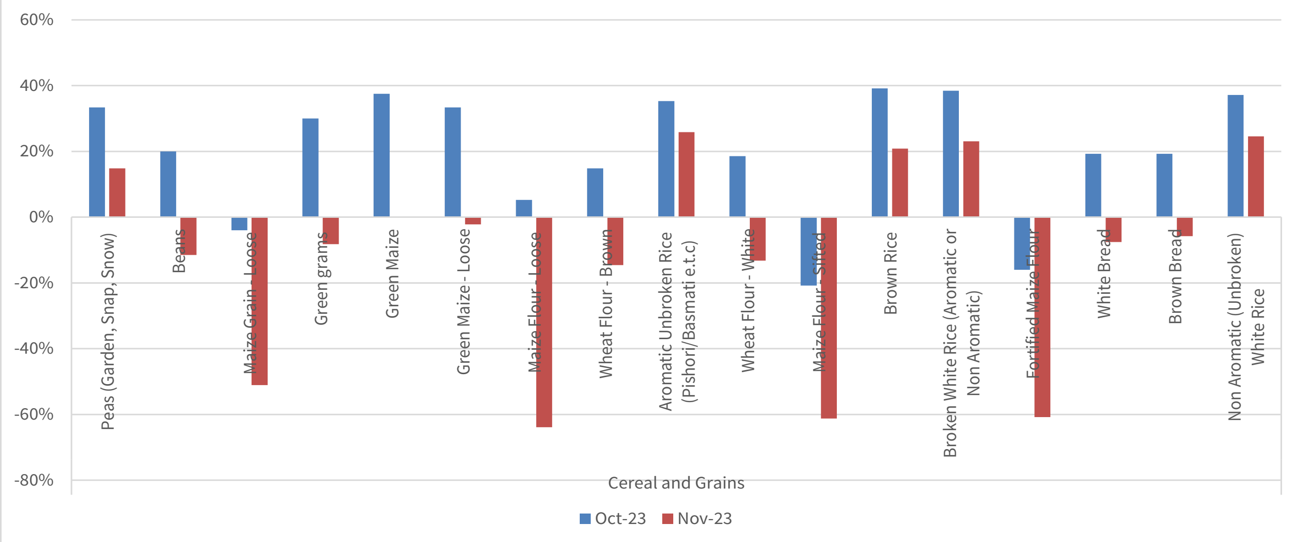
The survey revealed a decrease in the retail prices of some key agricultural commodities between October and November 2023. The prices of maize products reduced in November 2023 supported by ongoing harvests across most parts of the country. However, the price of some varieties of rice remained elevated due to high import prices, transport and processing costs. Both packeted and unpacketed milk prices declined further in November 2023 on account of increased pasture supported by favourable weather which led to a reduction in the volume of animal feeds being purchased. Additionally, the Government measures which allowed animal feed manufacturers to import 500,000 tonnes of duty-free yellow maize between March-August, 2023, continues to stabilize prices of animal feeds.

The price of sugar declined marginally in November 2023 as local production in the sugar belt began to recover from the challenges experienced earlier in the year which limited cane deliveries. However, some of the challenges in the sugar belt have persisted, including the premature harvesting of sugarcane by farmers, limited from the Kenya Sugar Board and fears associated with potential privatization of sugar factories, limited access to credit facilities, non-targeted fertilizer subsidies, high transport cost to deliver sugarcane to millers and poor road network, and exploitation by middlemen and millers who buy cheap and lack of extension services.

3.2 Expectations of Prices of Key Food Items

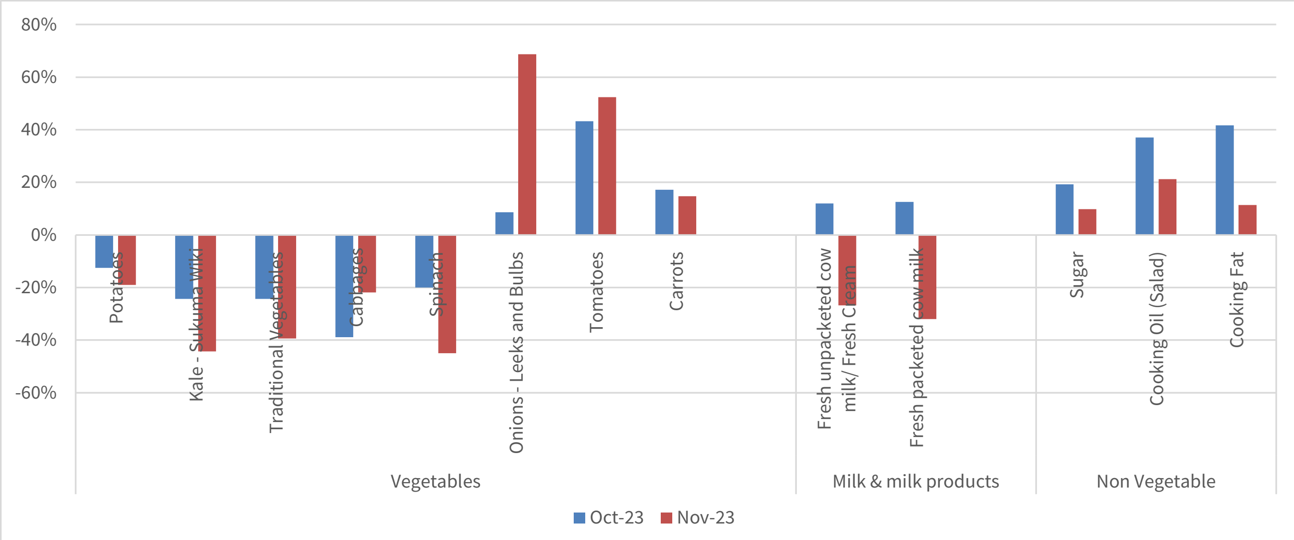
The Balance of Opinion points to a decline in the expected retail prices of maize products in December 2023 with the ongoing harvest in most parts of the country (**Figure 3**). However, the price of rice remains sticky due to reduced domestic production occasioned by high input costs, and an increase in the cost of importation of the commodity.

Figure 3: Retail Price Expectations for Cereals and Related Products in December 2023 (Percent)



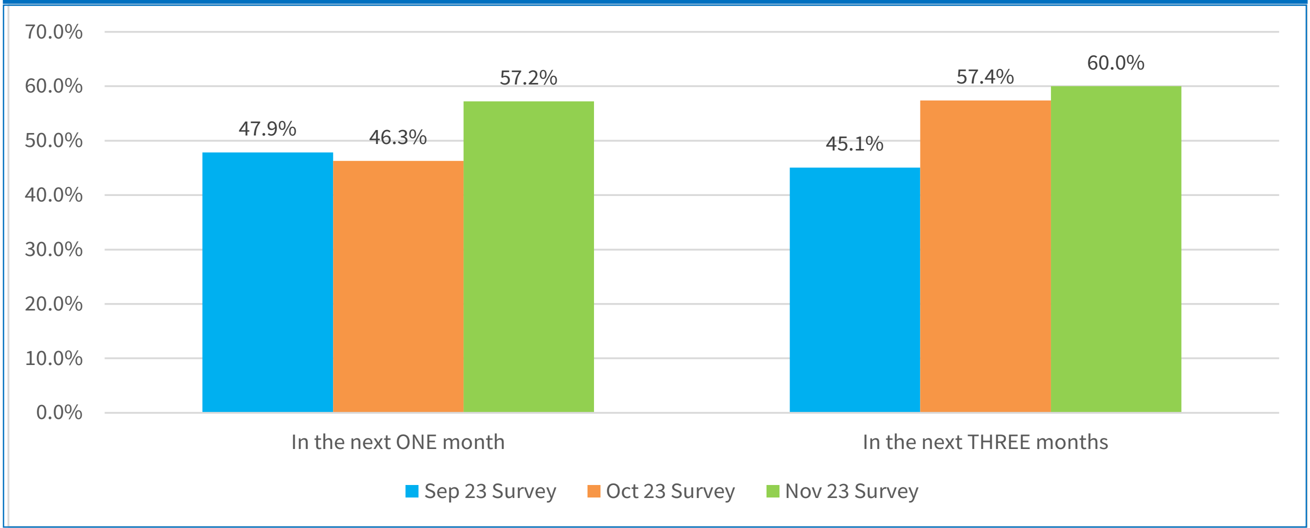
The price of processed and unprocessed milk is on a decline on account of the increased pasture resulting from favourable rainfall (**Figure 4**). The price of vegetable items is expected to reduce further in December, supported by increased supply of fast-maturing crops from the short rains season (October-December 2023). However, prices of onions and tomatoes are expected to remain sticky, with respondents stating that the ongoing rains could lead to continued spoilage given their sensitivity to heavy rains. Domestic prices of onions are also largely dictated by the production and pricing of onions from Tanzania; these tend to be relatively expensive due to their long shelf life and higher quality. Expectations about prices of cooking oil and cooking fat have moderated as international prices have eased following recovery of palm oil production globally. Additionally, sugar prices are expected to moderate on account of declining international prices and reopening of local sugar factories in October 2023.

Figure 4: Retail Price Expectations for Vegetables, Non-Vegetables and Animal Products in December 2023 (Percent)



The survey also sought respondents' views on expectations about price changes of other consumer goods, besides food, mainly manufactured and processed items (**Figure 5**). The balance of opinion analysis indicates rising pressure on consumer prices with more respondents (57.2 percent compared to 47.9 percent in September) having indicated that they expect the prices of these goods to increase in the next one month. The higher price expectations for these goods was attributed to the high cost of production arising from elevated prices of imported goods, high energy costs and the impact of tax measures. Similarly, 60 percent of the November respondents expect the consumer prices to increase in the next three months, which is higher than the 57.4 percent and 45.1 percent reported in October and September, respectively.

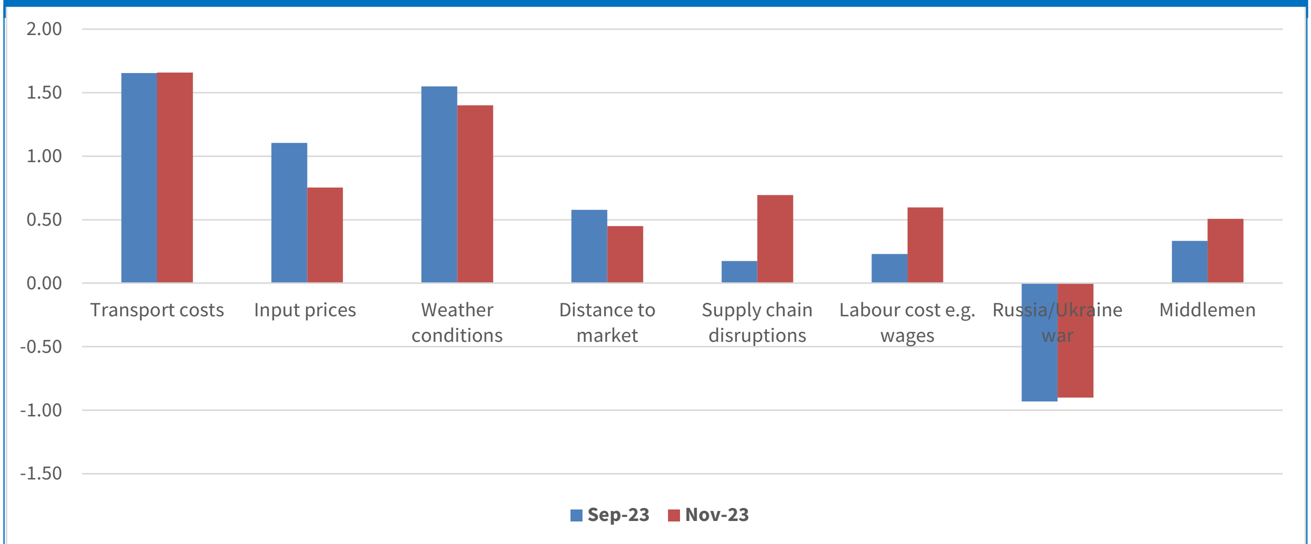
Figure 5: Consumer Price Expectations (Percent)



3.3 Factors affecting Retail and Wholesale Prices

The survey also sought to establish the factors affecting wholesale and retail prices of select food items (**Figure 6**). Similar to the previous surveys, the balance of opinion identified transport costs, input costs and weather conditions as the main factors impacting both retail and wholesale prices (**Figure 18**). Transport costs were reported to have the biggest negtive impact, reflecting the increase in pump prices as a result of the implementation of 16 percent VAT. Respondents indicated that the weather was favourable in November and is supportive of ongoing harvests. However, there are concerns that the El-Nino phenomenon could adversely affect output of certain crops such as onions and tomatoes. Supply chain disruptions and labour costs also contributed to retail prices but the impact of the Russia/Ukraine war has faded.

Figure 6: Factors affecting Retail Prices



Analysis of output

This section investigates the performance of key agricultural produce focusing on indicative productivity indicators and use of farm inputs. Productivity is analysed using yields per acre for various agricultural commodities. The yields are derived by dividing the total output per crop with the area under cultivation as measured in acres/hectares. This is followed by an analysis of the various inputs applied by farmers in production, examination of expectations in output and acreage, supply factors, access to credit facilities and views on how to improve agricultural production.

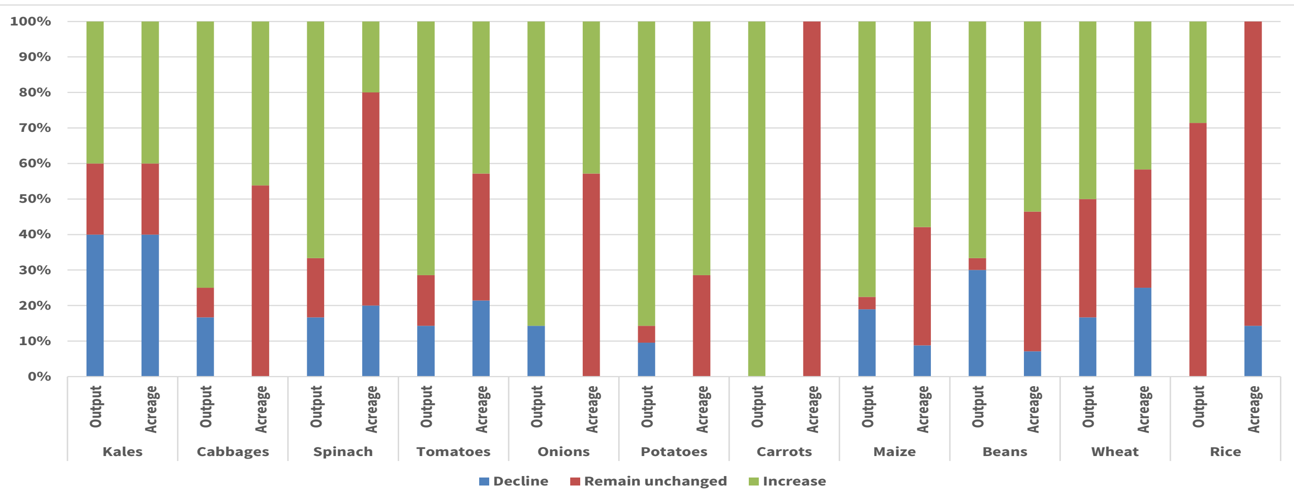
3.4 Productivity of Select Food Crops

The yields per acre vary depending on the season, and tend to be higher during the peak season. Improvement in the yields is boosted by an optimal combination of farm inputs. The level of productivity from the estimates of the total crop harvested and the area under cultivation as provided by the farmers signaled improved productivity of vegetables, cereals and grains in November as compared to the previous harvest on account of favourable weather conditions and access to the government's subsidized fertilizer.

3.5 Market Supply Expectations

The survey further sought to establish the expectations about changes in output and acreage in the next harvest. Majority of sampled farmers expect the supply of most food items to either increase or remain the same on account of favourable weather conditions. With this in mind, most farmers expect their acreage to remain unchanged or increase as they take advantage of the favourable weather and expected higher returns from the current season. The yields per acre for commodities such as cabbages, onions, and carrots is expected to improve significantly (**Figure 7**).

Figure 7: Output and Acreage Expectations in December 2023



Farmers indicated that crop acreage depends on the prevailing weather conditions, economic outlook, and the expected rate of return from the specific crop. Several farmers cited proper timing of issuance of subsidized fertilizer, the quality of fertilizer accessed, and the crop being planted as important factors that support increase in acreage.

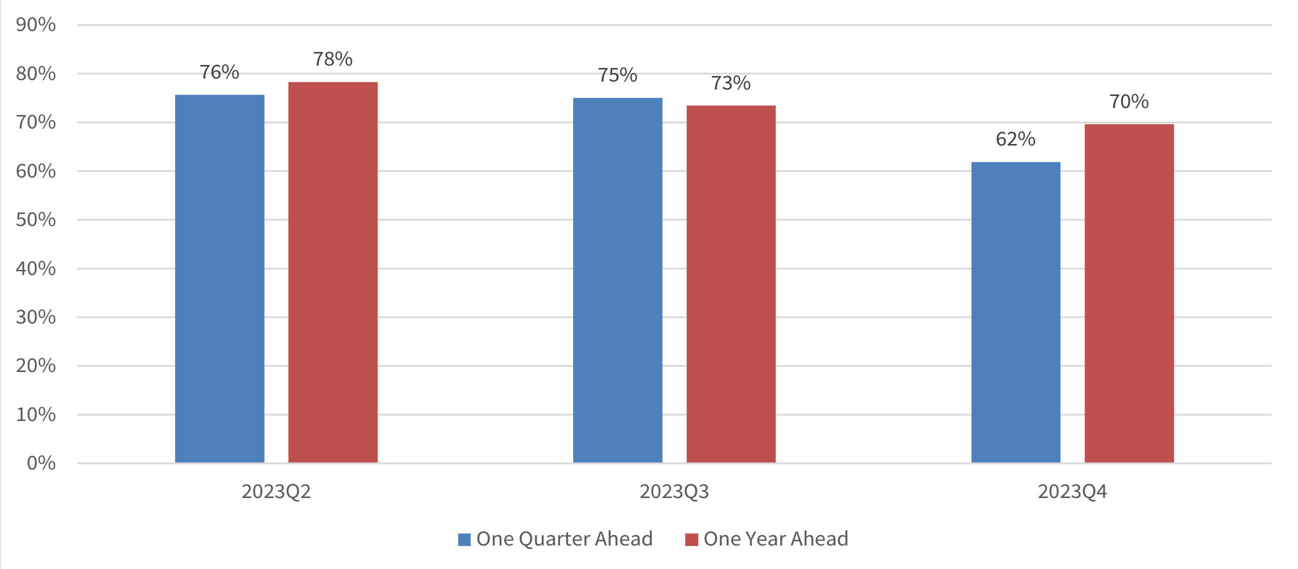
3.6 Expectations about overall economic performance

Respondents were asked to express their views about how they expected the overall economy to perform in the next quarter as well as in the next one year. The responses were averaged by quarter, hence the fourth quarter of 2023 captures responses from the November Survey while the third quarter of 2023 captures responses from the July and September surveys (**Figure 8**). Optimism about the performance of the economy one quarter ahead moderated in 2023Q4 (62 percent) compared to 2023Q3 (75 percent and 76 percent in the September and July surveys, respectively). Similarly, a lower proportion of respondents (70 percent) expect the performance of the Kenyan economy to improve in the next one year relative to 73 percent and 78 percent in the September and July surveys, respectively.

The moderation in expectations partly reflects the impact of high production costs including energy and imported inputs, as well as the impact of tax measures which are still transmitting in the economy.

The favourable weather conditions are expected to boost agricultural production. However, the increased rainfall could lead to panic sales by farmers who fear losses arising from spoilage of products that are sensitive to heavy rain. Moreover, farmers appear to adopt similar farming practices and timings which ends up disadvantaging them since harvest often takes place at the same time, leading to reduced prices.

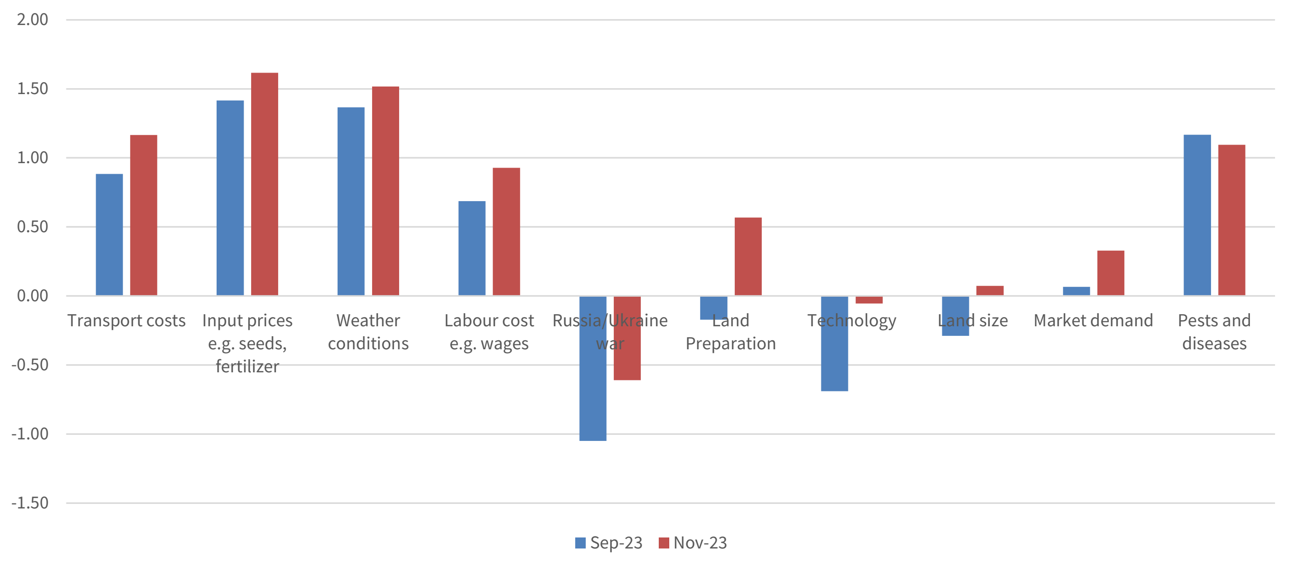
Figure 8: Optimism about Economic Performance (Percent)



3.7 Factors affecting Agricultural production

A good understanding of the dynamics of the performance of the agriculture sector is critical to unlocking its potential to enhance food security and maintain price stability. An analysis of the November 2023 survey revealed that high input prices, weather conditions, transport, pests and diseases, and labour costs impacted heavily on agriculture. High cost of inputs, particularly seeds and pesticides, have forced farmers to apply less than optimal amounts which has adversely affected output. Weather conditions have remained largely favourable since the start of the long rains season and is expected to continue supporting agriculture. The negative balance of opinion reported for technology signal limited role in impacting agricultural production. Most farmers rely on machines such as tractors and ploughs during land preparation before switching to human labour during planting, weeding and harvesting. Regarding labour costs, the findings of the Survey showed that the push by staff unions for increase in the minimum wage has also affected hiring of workers given that the incomes have not grown to levels that can sustain regular waged labour for the entire season (**Figure 9**).

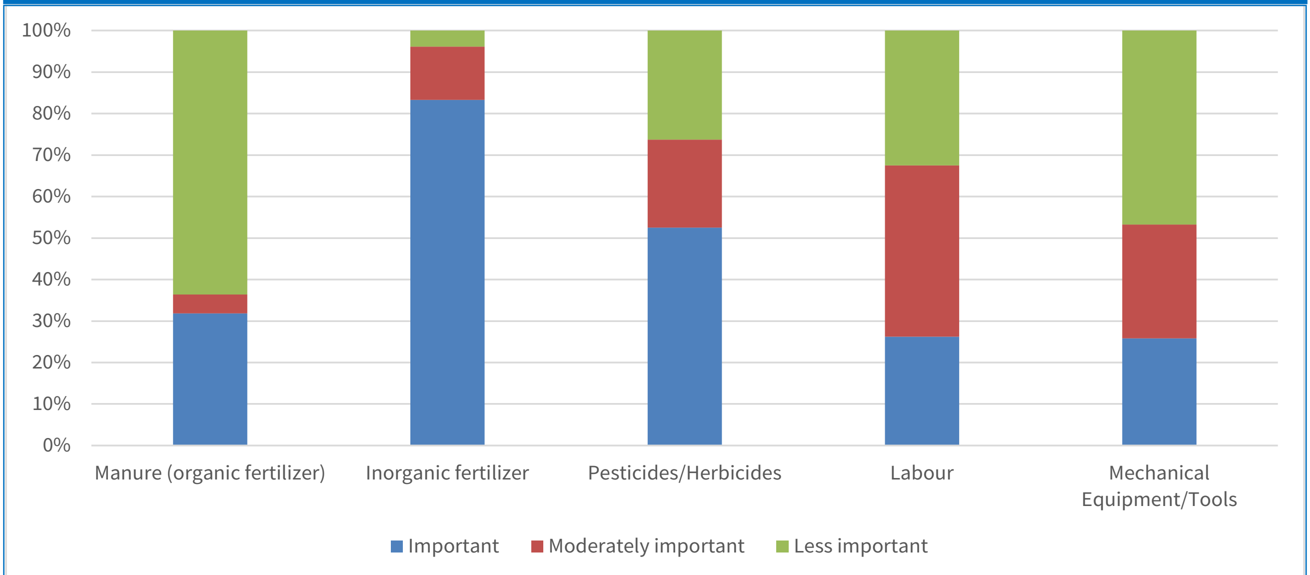
Figure 9: Factors affecting Agricultural Production



3.8 Use of Farm inputs in Agricultural Production

Use of farm inputs that embody modern technology such as improved seeds, inorganic fertilizers, agrochemicals, farm implements, and irrigation has the potential to increase output and reduce food insecurity. The November 2023 Survey established that while most farmers employ a combination of inputs to improve their output, inorganic fertilizer ranked highest. (**Figure 10**).

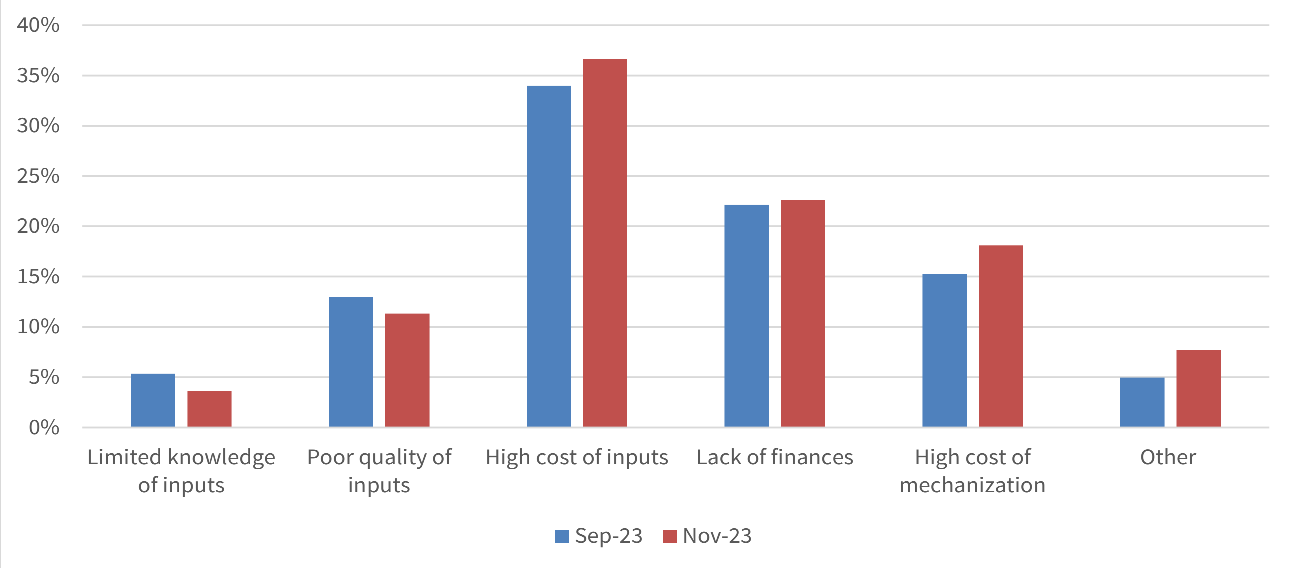
Figure 10: Significance of Farm Inputs in Agricultural Production



3.8.1 Challenges associated with access to farm inputs

Despite the benefits associated with optimal combination of farm inputs, access to affordable and quality farm inputs remains elusive to most farmers. In the September and November surveys, most farmers cited high cost of inputs such as seeds and fertilizer and lack of finances as their main constraints. Other challenges mentioned include high cost of mechanization and low quality fertilizer and seeds. Regarding mechanization, several large-scale farmers argued that the value added tax (VAT) levied on plant and machinery such as tractors, harrows, and ploughs has made these inputs less affordable (**Figure 11**).

Figure 11: Challenges Limiting Access to Farm Inputs (Percent)



3.8.2 Access to Government subsidized fertilizer

Access to government subsidized fertilizer among the sampled farmers averaged 56 percent in November 2023 relative to 69 percent in September 2023. The decline largely reflected seasonal factors as well as the noted reduced uptake by the large-scale farmers which averaged 57.8 percent in November down from 82 percent in September (**Figure 12**). The large scale farmers reduced their uptake of the subsidized fertilizer due to the fact that it was not specific to most of the crops for the season. For small and medium scale farmers, however, the subsidized fertilizer remained the best option and the high uptake was a strong indicator of the expected improved yields.

Figure 12: Access to Subsidized Fertilizer

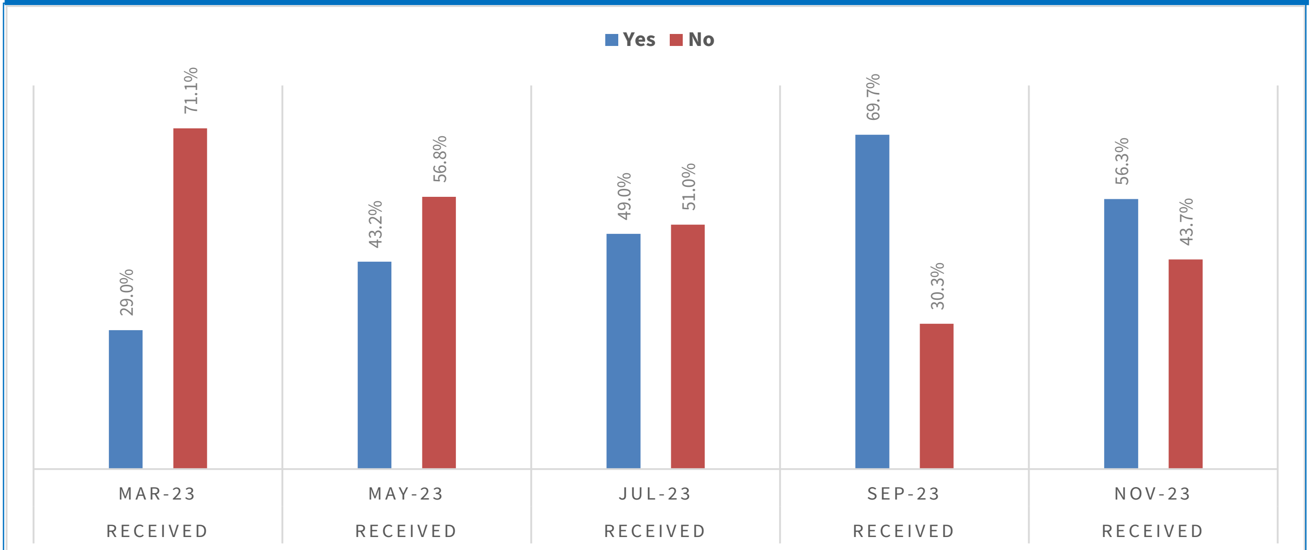


Table 1: Access to subsidized Government fertilizer

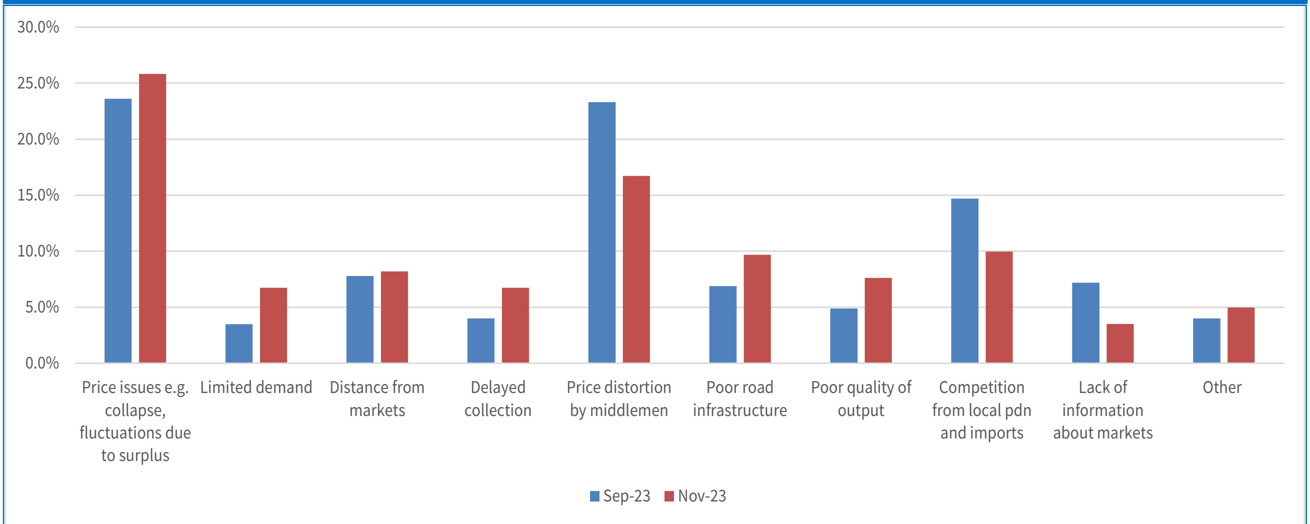
	Have you recently benefited from any Government subsidy on fertilizer?		
Farm Category	**No**	**Yes**	**Total**
Large Scale (Above 12 acres)	42.22	57.78	100.00
Medium Scale (5 -12 acres)	45.00	55.00	100.00
Small scale (Below 5 acres)	45.45	54.55	100.00
Total	**43.68**	**56.32**	**100.00**

The 43.7 percent respondents without access to the fertilizer subsidy cited seasonal factors, lack of finances to redeem the voucher, wrong timing, long queues, long distances and lack of title deeds as the main constraints to accessing the subsidy.

3.9 Factors affecting Marketing/Sale of Farm Produce

Regarding marketing/sale of farm produce, farmers sampled in both the September and November 2023 Surveys cited price fluctuations (particularly collapse in prices), price distortion by middlemen, and competition from local produce and imports as the main challenges. Distortion of prices by middlemen was more pronounced in the November Survey compared to the September Survey. Other challenges cited include distance from markets, poor road network and limited demand (**Figure 13**).

Figure 13: Factors Affecting Marketing/Sale of Farm Produce



Contract farming has helped farmers in accessing farm inputs and selling their produce seamlessly, since the terms and conditions governing the engagement are agreed upon in advance. Additionally, the farmers are spared the transport costs since the produce is collected directly from the farm by the buyers. However, the model has its own challenges because a sharp dip in prices due to flooding of the market whenever farmers plant similar crops like cabbages, tomatoes and potatoes can orchestrate huge loses to the farmer, who bears the highest risk.

3.10 Access to Credit facilities in Agriculture

Loans to the farmers play a critical role in enhancing food security by facilitating farmers with farm inputs and improved farming practises. They facilitate payment of workers, purchase/lease of land and adoption of appropriate technology, among others. This, however, depends on the cost of the loan which varies by provider. Credit uptake among farmers in terms of those who had borrowed in the last 12 months to finance farming activities is summarized by source in **Figure 14**.

Figure 14: Proprtion of respodents who Borrowed to Finance Farming by Source

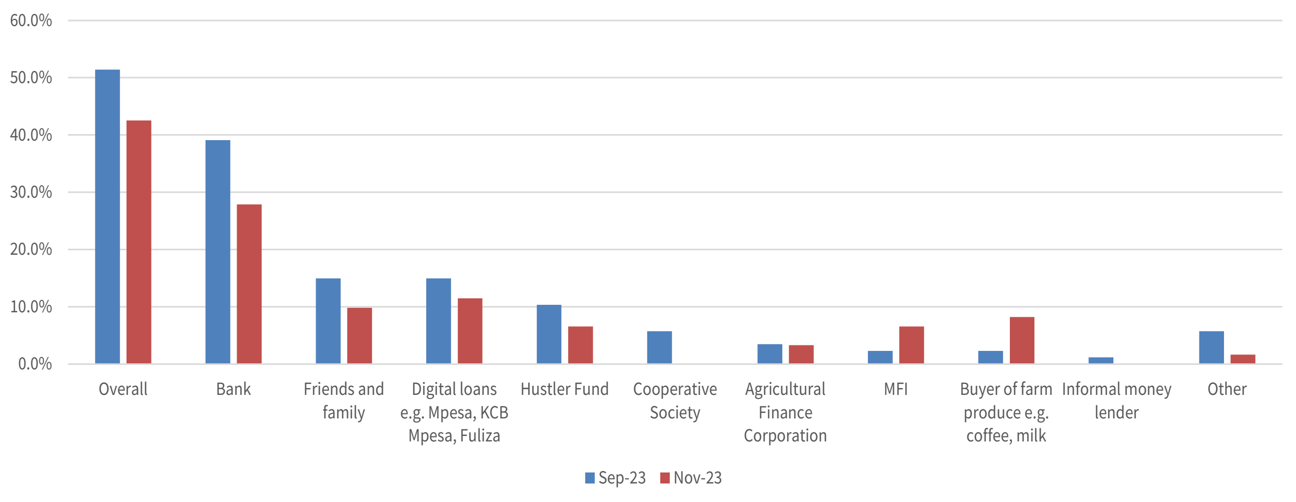


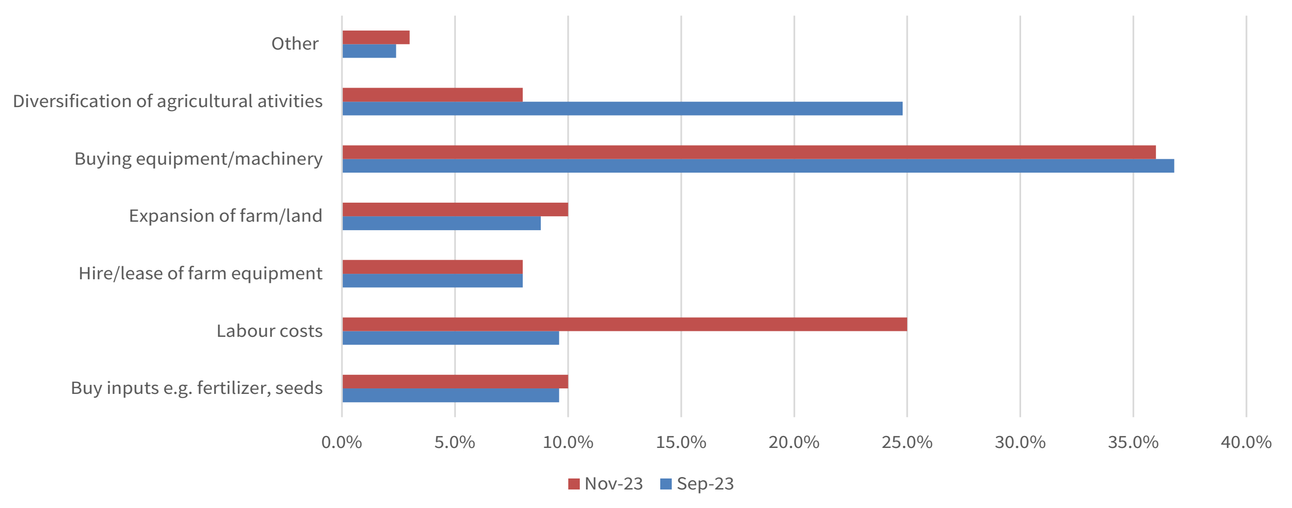
Table 2: Acess to finance

	Have you borrowed money to finance your farming activities in the last 12 months		
Farm Category	**No**	**Yes**	**Total**
Large Scale (Above 12 acres)	47.83	52.17	100.00
Medium Scale (5 -12 acres)	80.00	20.00	100.00
Small scale (Below 5 acres)	57.14	42.86	100.00
Total	**57.47**	**42.53**	**100.00**

The November 2023 Survey reported a slightly lower uptake of loans by farmers (42.5 percent) compared to September 2023 survey. The main lenders to the agriculture sector are commercial banks followed by friends and family, Saccos and digital lenders such as Mpesa, KCB Mpesa, Mshwari, among others. The Hustler Fund which was introduced in 2022 to provide cheaper credit to individuals and businesses at the bottom of the pyramid accounted for 6.6 percent and 10.3 percent in November and September, respectively, pointing to the great potential the Fund has to finance small scale farmers in meeting their operating costs such as payment of workers and purchase of inputs.

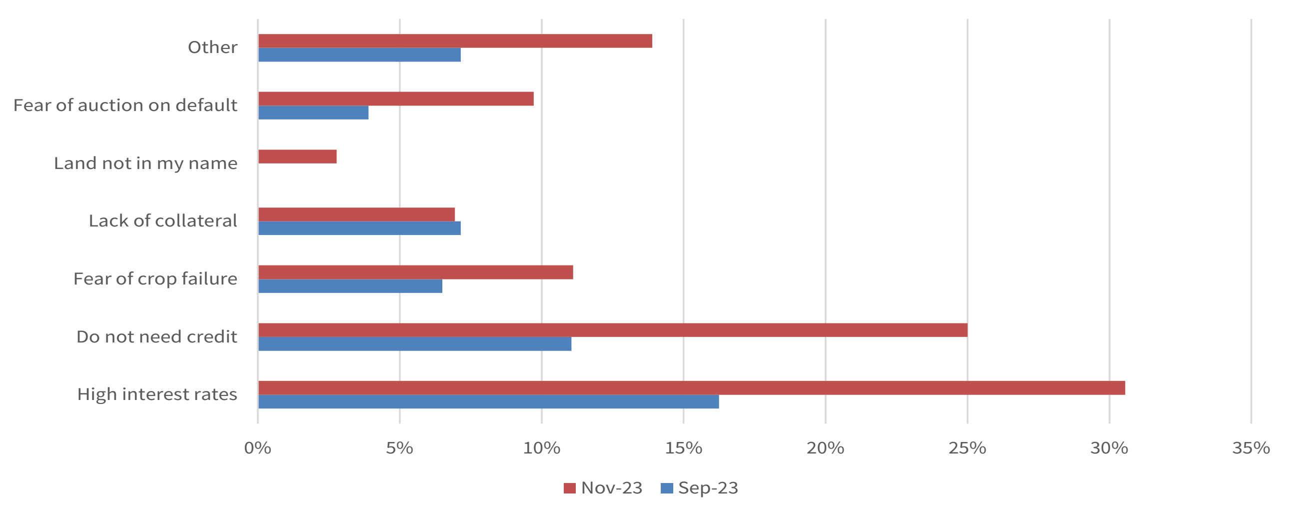
In terms of farm categorization, a higher proportion of large scale farmers accessed loan facilities compared to medium and small scale farmers, perhaps due to economies of scale and higher absorption capacity. Large scale farmers accounted for 52.2 percent of the loans towards agriculture compared to 20.0 percent and 42.8 percent for medium and small scale farmers, respectively. Borrowed funds are chaneled to a variety of uses as summarized in **Figure 15**.

Figure 15: Purpose of Agricultural Loans



A majority (36.0 percent) of the farmers sampled in the November Survey used the borrowed funds to buy farm equipment and machinery similar to the September survey. This could be explained by the need for machinery and equipment during the harvest season and land preparation for the new season. This was followed by the labour costs which peaks during the planting and harvest season. There was a dip in the proportion of respondents who borrowed to diversify agricultural activities. Access to agriculture finance is however not without challenges. The barriers to agriculture finance are summarized in **Figure 16**.

Figure 16: Barriers to Credit among Farmers

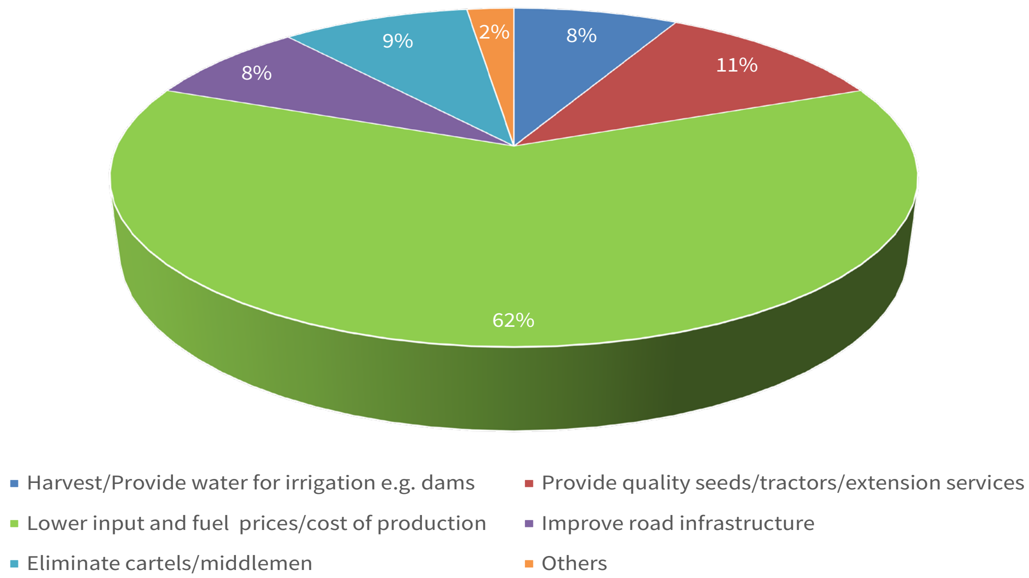


High interest rates was cited by 31 percent of the sampled farmers as the main barrier to agriculture finance in November 2023 up from 16 percent in September 2023. This was followed by 25.0 percent who voluntarily excluded themselves arguing that they they did not need credit. Other barriers include; lack of collateral, fear of crop failure, fear of action on default among others.

4. VIEWS ON HOW TO IMPROVE THE AGRICULTURE SECTOR

The Survey sought views from farmers in the November 2023 Survey on how to improve agricultural production. Most farmers recommended lowering of the cost of fuel which is feeding into the input prices/cost of production (62 percent), provision of quality seeds, tractor and extension services (11 percent), and elimination of middlemen (9 percent) who distort prices, harvesting of rainwater alongside the provision of irrigation water through sinking of boreholes and dams (8 percent) to supplement rainfed agriculture. Farmers also recommended improvement of the road infrastructure (8 percent) to facilitate the transport of farm produce to the markets, among others (**Figure 17**).

Figure 17: Views on how to Improve Agricultural Production



5. CONCLUSION

This Agriculture Sector Survey report summarizes findings from the November 13 - 17, 2023 survey to obtain indicative information on the recent trends and market expectations of prices and output of key agricultural commodities in select markets and farms for the purpose of informing monetary policy. In particular, the Survey focused on prices of key agricultural commodities in both retail and wholesale markets, agricultural output from sampled farms, acreage and output expectations, factors affecting agricultural production, marketing and sale of farm produce, access to credit facilities and views on how to improve agricultural production. The Survey drew 215 respondents from: wholesale traders, retailers, and farmers in select towns (Nairobi and the neighboring counties including Kiambu, Kajiado and Machakos, Naivasha area, Nakuru, Narok, Bomet, Kisumu, Mombasa, Kisii, Eldoret, Kitale, Nyandarua, Nyahururu, Mwea, Machakos, Isebania, Meru, Nyeri, Isiolo, Oloitoktok, Namanga, Makueni and Molo) across the country. Key findings from the Survey were as follows:

- Retail prices of most vegetable and non-vegetables declined in November and are expected to decline further.
- Expectations about output of key food items in the next harvest and acreage for cultivation remain positive.
- Weather conditions, transport costs, and input prices continue to impact output and prices of key food items.
- Access to government subsidized fertilizer declined slightly to 56.3 percent down from 69 percent in September 2023 on account of the reduced uptake of subsidized fertilizer among large scale farmers and seasonality factors.

- Banks, friends/family, Digital credit and the Hustler Fund were the main sources of credit for farmers with the funds mainly used to finance farm implements, inputs and labor.
- Optimism regarding the possibility of higher economic growth moderated in November while concerns regarding the impact of rising energy costs kept consumer price expectations elevated.

Based on the findings of the survey, key recommendations include the following:

i) Address the energy costs which have a direct impact on the cost of inputs due to the high transportation costs which must be factored in.
ii) Intensify the supply of rain harvesting and storage equipment as well as construction of dams.
iii) Improve road infrastructure and quality of inputs.
iv) Deepen access to affordable credit facilities.

ANNEXES

Figure 18: Factors Affecting Wholesale Prices

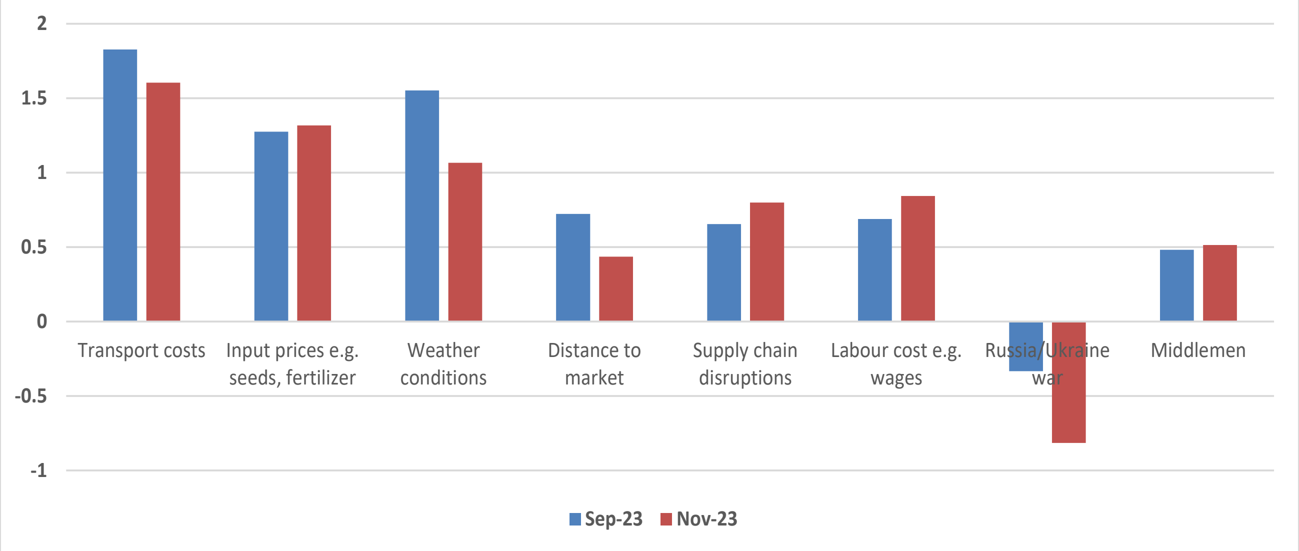
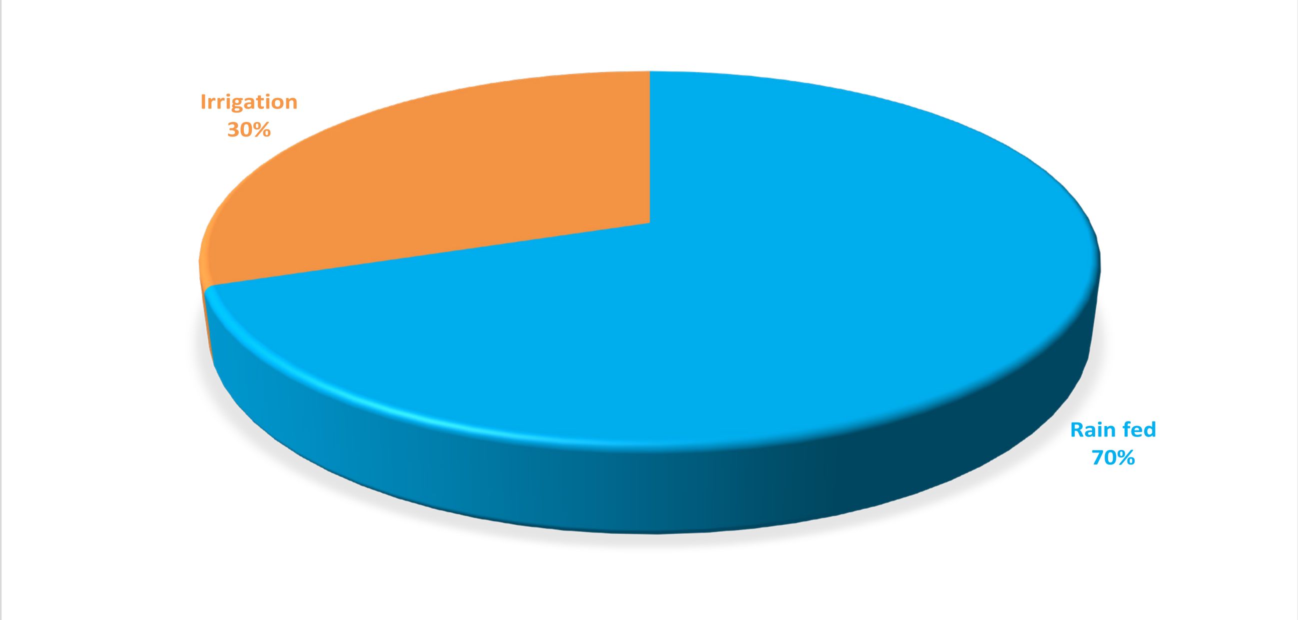


Figure 19: Main Water Source for Farming



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