

Agriculture Sector Survey

September 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) and 27 percent indirectly through its linkages with other sectors. 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 mover of the manufacturing sector accounting for 40 percent 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. Towards 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 staple 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 rainfed 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 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, in 2023 Q1, the agriculture sector rebounded to a 5.8 percent growth rate on account of favourable weather conditions experienced across the country. The favourable weather supported maize production which is projected to increase from 34.3 million bags in 2022 to 44.5 million bags in 2023 based on the Ministry of Agriculture August 2023 projections.

The September 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, marketing/sale of farm produce.
- v. Indicative information on access to credit facilities by farmers; and
- vi. Views on how to improve agricultural production.

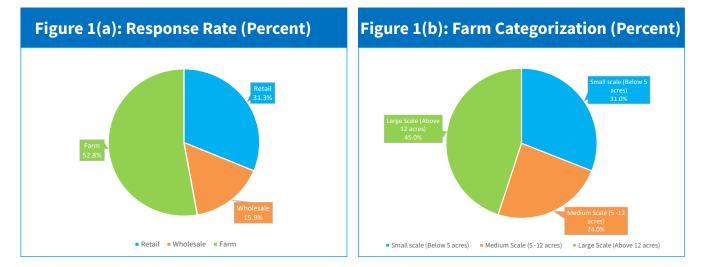
The Survey was conducted between September 11 and 15, 2023 after the long rains season and associated improved food supply amidst rising global and domestic energy prices. The results revealed a decline in the prices of key food items particularly maize and wheat flour following improved weather conditions. Additionally, the survey revealed an increase in the uptake of the government subsidized fertilizer which stood at 69 percent of the sampled farmers. That notwithstanding, high transport costs and input prices continued to negatively impact output and prices of key food items, while improved weather conditions supported increased production. Marketing/sale of farm produce was significantly impacted by price-related issues and competition from imports and local produce. The Russia- Ukraine war which earlier affected agriculture through disruption of supply of inputs had minimal direct impact on agricultural production.

2. METHODOLOGICAL FRAMEWORK

The September 2023 Survey assessed changes in both wholesale and retail prices of select 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 include 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.

The farmers' estimates of output and acreage were used to determine the productivity (yields) of select food crops. 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 53 percent of the responses, 45 percent of them being large scale farms (Figure 1).



3. MAIN HIGHLIGHTS FROM THE SURVEY

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

- i.) Retail prices of some key food items especially cereals (maize grain -loose, green grams) and maize and wheat products generally moderated in September 2023. However, prices of a few commodities including onions, green maize and certain rice products increased.
- ii.) Expectations about output and acreage of key food items in the next harvest remain positive.
- iii.) Weather conditions, transport and input costs

continue to impact both output and price of key food items.

- iv.) Access to government subsidized fertilizer increased significantly to 69 percent in September 2023 relative to 49 percent in July.
- v.) Banks, friends/family, Sacco loan and the Hustler Fund were the main sources of credit for farmers; funds were used to finance, majorly farm implements, inputs and labor
- vi.) Optimism regarding the possibility of higher economic growth and reduced consumer prices increased compared to the previous July Survey.

3.1 Prices of Key Agricultural Commodities

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

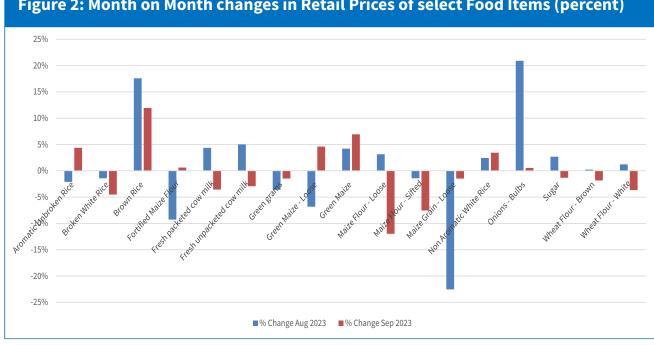


Figure 2: Month on Month changes in Retail Prices of select Food Items (percent)

The survey revealed a decrease in the retail prices of some key agricultural commodities between August and September 2023. The price of maize reduced in September 2023 as harvests from most parts of the country continues. However, the price of rice remained elevated due to high import, transport and processing costs.

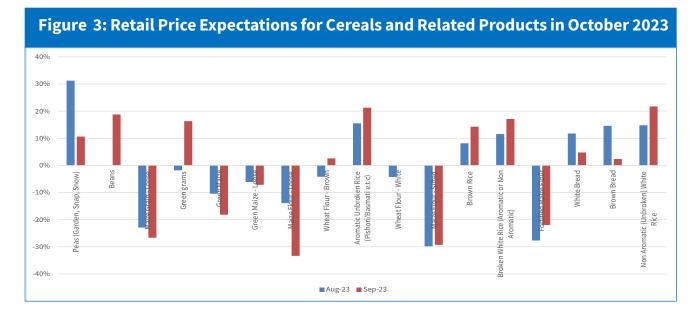
Both packeted and unpacketed milk prices declined further in September 2023 on account of increased pasture following the long rains which led to a reduction in the volume of animal feeds being purchased. The March 17 gazette notice through which the government allowed animal feed manufacturers to import 500,000 tonnes of duty-free yellow maize before August 6, 2023 also continues to stabilize the prices

The price of sugar remained sticky in September 2023 due to limited supplies from the sugar belt which reported reduced cane deliveries. The factors mentioned in the July survey include the premature harvesting of sugarcane by farmers to produce biproducts such as jaggery, ethanol, limited support

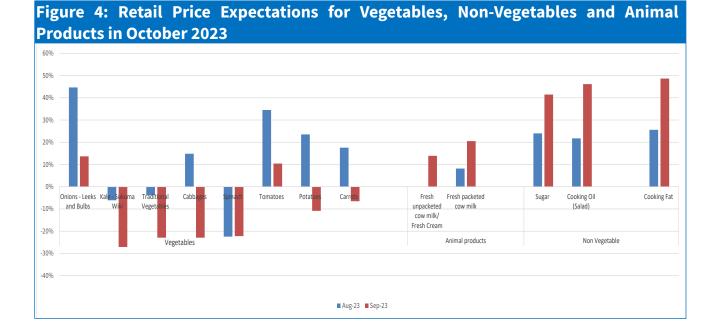
from government bodies like Kenya Sugar Board and privatization, limited access to credit facilities, non-targeted fertilizer subsidies, lack of transport to deliver sugarcane to millers and poor road network, exploitation by middlemen and millers who buy cheap and lack of extension services among others persists. The high onion prices are on account of the reduced local production and the high import price from Tanzania which is the main supplier. The Survey however noted that there is a shift towards Ethiopian market for onions to bridge the gap, though the prices were still elevated.

3.2 Expectations of Prices of Key Food Items

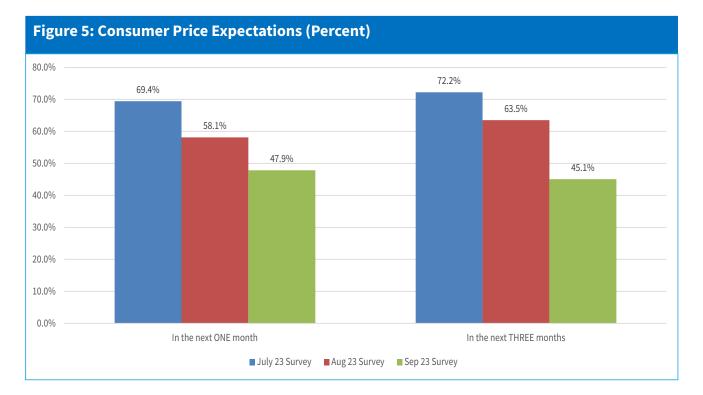
The Balance of Opinion points to a decline in the expected retail prices of grain maize and maize products in October 2023 with the ongoing harvest in most parts of the country (**Figure 3**). However, the prices of beans, rice and green grams remain sticky due to both domestic and external factors including; reduced production, high input costs and high cost of imports.



The price of processed and unprocessed milk could creep up as farmers supplement the green pasture with processed feeds as they await the shorts rains to commence (**Figure 4**). The price of vegetable items is expected to reduce in October supported by increased supply of the fast-maturing crops from the long rains season and the start of the short rains season. Onion prices are expected to moderate or fall gradually with increased local supplies and cheaper imports from Ethiopia. Expectations about cooking oil/fat and sugar prices remain elevated owing to the high energy costs, import cost and reduced cane deliveries. The sugar prices could however be moderated by the expected reopening of sugar factories in October which may coincide with the sugarcane harvest.

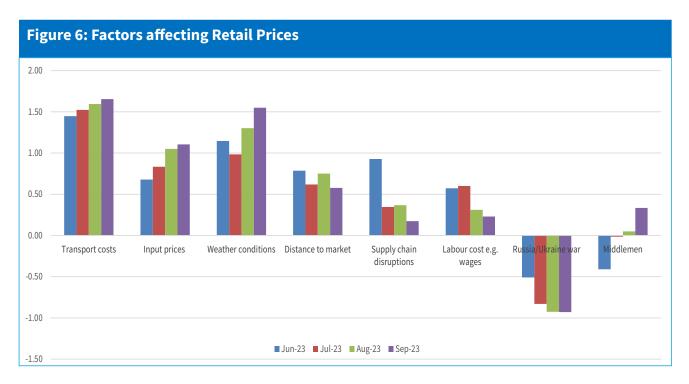


The Survey also sought respondent's views on expectations about price changes of goods (consumer goods) that they regularly buy **(Figure 5)**. The balance of opinion analysis indicates a higher proportion of respondents expect the price of consumer goods to decline in the next one month. In other words, the proportion of respondents who expect prices to increase decreased to 47.9 percent from 58.1 percent in the August survey. Similarly, 45.1 percent of the September respondents expect the consumer prices to increase in the next three months, which is lower than the 63.5 percent and 72.2 percent reported in August and July, respectively.



3.3 Factors affecting Retail and Wholesale Prices

The survey also sought to establish the factors affecting 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 14). Transport registered the biggest impact, following the increase in energy costs following implementation of the 16 percent VAT on pump prices and full removal of the fuel subsidy. Although supply chain disruptions, labour costs and middlemen had a positive impact, the impact was muted. The presence of middlemen and brokers in the supply chain can be very costly to the traders as their share is also factored in the final pricing. Natural occurrences such as floods impact the prices through supply chain disruptions whenever they cut off some bridges and roads leading to the farms. Distance to markets also had a significant impact on price setting. The impact of the Russia/Ukraine war which mainly affects agriculture through disruption of fertilizer, grains and oil supply was insignificant and is possibly already captured through transport and inputs costs.



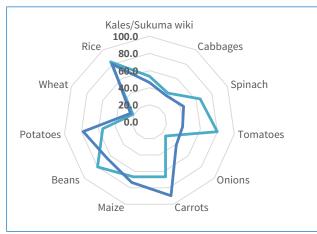
Analysis of output

This section investigates the performance of key agricultural produce focusing on indicative productivity indicator and use of farm inputs. Productivity is analyzed 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, rising during the peak season. Improvement in the yields is boosted by an optimal combination of farm inputs. Productivity in September 2023 was computed based on the estimates of the total crop harvested (actual output) in each month/season and the area under cultivation as provided by the farmers (**Figure 7**).

Figure 7: Estimated yields per acre



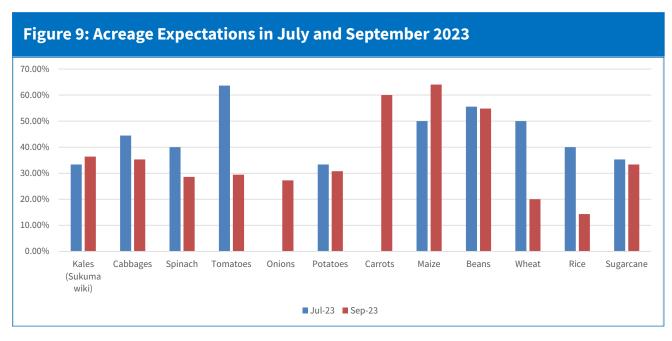
Computations based on the September survey shows that maize grains, potatoes, carrots and onions reported higher yields in the previous harvest on account of favourable weather conditions and increased access to the government's subsidized fertilizer. However, vegetables reported lower yields over a similar period.

3.5 Market Supply Expectations

The Survey further sought to establish the expectations about changes in output and acreage in the next harvest (Figure 8 and 9). Majority of sampled farmers expect the supply of most food items to increase on account of improved weather

as well as the quality of the last fertilizer issued. This is illustrated using the balance of opinion for July and September 2023. The output expectations for carrots, maize, onions and sugarcane are expected to surpass the July survey expectations.

Figure 8: Output Expectations in July and September 2023 (Percent) 100.00% 90.00% 80.00% 70.00% 60.00% 50.00% 40.00% 30.00% 20.00% 10.00% 0.00% Cabbages Spinach Tomatoes Onions Potatoes Maize Beans Wheat Rice Kales Carrots Sugarcane (Sukuma wiki) ■ Jul-23 ■ Sep-23

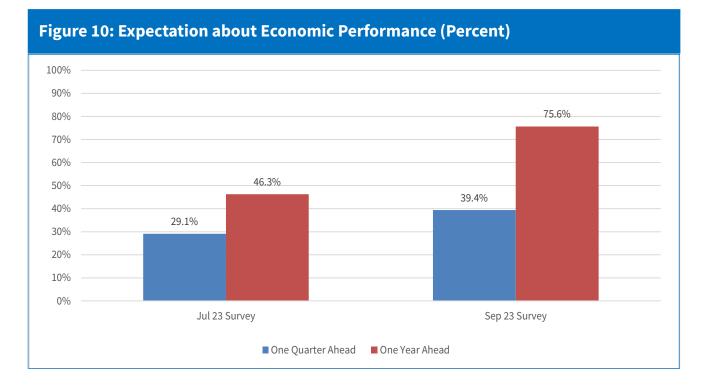


Though positive, expectations about vegetable output in the next harvest dropped in the September survey.

Farmers indicated that acreage for crops depend on the prevailing climatic conditions, outlook and the expected rate of return from the specific crop. Several farmers indicated that the increase in the subsidized fertilizer and proper timing during planting and top dressing will support the increase in acreage. In this case, farmers expect the area dedicated to the production of carrots and maize to increase. This could be explained by the high volume of maize harvests being reported as well as the good **price** that carrots are fetching in the market. The acreage could rise further with the onset of the short rains season which will support farming.

3.6 Expectations about overall economic performance

To gauge the expectations about changes in the performance of the Kenyan economy, respondents were asked to express their views on their expectations about the overall economic performance (**Figure 10**). More respondents (39.4 percent) in the September 2023 Survey expressed optimism about increase in economic performance in the next three months compared to 29.1 percent in the July Survey. Similarly, a higher proportion of respondents (75.6 percent) expect the performance of the Kenyan economy to improve in the next one year relative to 46.3 percent in the July 2023 Survey. The respondents argued that the range of policies adopted by the government and the increased food supply will help stabilize the economy.



Despite the strong optimism largely associated with the expected bumper harvest in the next season, concerns regarding storage facilities of perishable crops such as potatoes abound. Most farmers are forced to do panic sales at throw away prices for fear of their produce going bad or the price collapsing due to flooding of the markets with goods from other local suppliers and imports. Interestingly, farmers appeared to adopt similar farming practices and timings which ends up disadvantaging them since the harvest often takes place at the same time.

3.7 Factors affecting Agricultural production

A good understanding of the dynamics in agriculture sector is critical in unlocking its potential to enhance food security and maintain price stability. An analysis of the September 2023 survey revealed that high input costs, weather patterns, pests and diseases, transport and labour costs impacted agricultural production the most. High cost of inputs, particularly fertilizer, has forced farmers to apply less than optimal amounts which has adversely affected output. The weather conditions have remained favourable since the start of the long rains season and is expected to continue supporting agriculture as the short rains season starts. Some farmers in Mwea cited snails' infestation, which are destroying rice in the farms, yet the snails are resistant to the available pesticides. The negative balance of opinion reported for the war in Ukraine, technology and land signal their limited role in impacting agricultural production (Figure 11). 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, the Survey noted that the push by staff unions for increase in minimum wage has also affected hire of workers given that the incomes have not grown to levels that can sustain waged labour for the entire season.

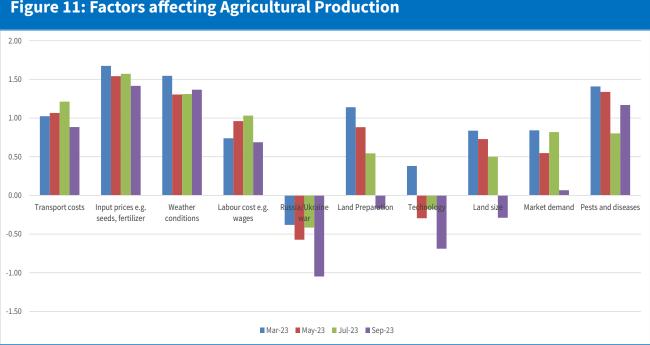
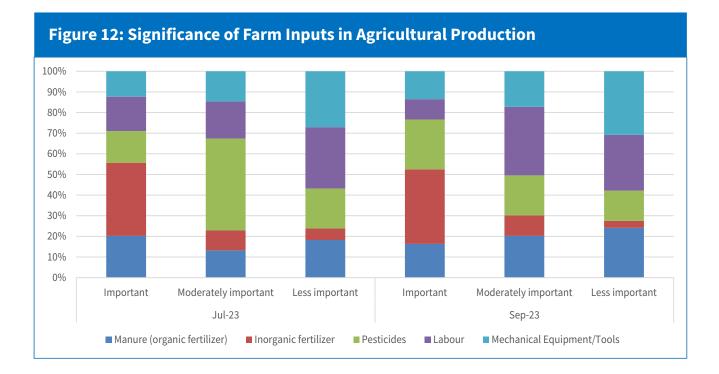


Figure 11: Factors affecting Agricultural Production

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 potential to increase the level of output and reduce food insecurity for the masses whose mainstay is

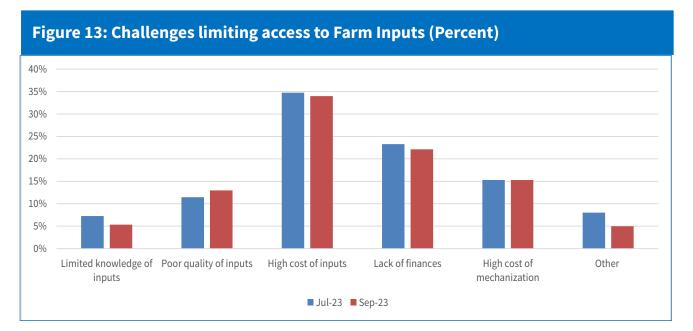
agriculture. Similar to the July 2023 survey, the September 2023 Survey established that while most farmers employ a combination of inputs to improve output, use of inorganic fertilizer ranked highest. This was followed by use of organic fertilizer or manure and pesticides (Figure 12).



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. Most farmers cited high cost of inputs such as seeds and fertilizer and lack of finances as the main constraints in both the July and September Surveys. Other challenges mentioned include; high cost of

mechanization; low quality fertilizer/seeds; and limited knowledge of inputs **(Figure 13)**. Regarding mechanization, several farmers and particularly the large scale argued that the value added tax (VAT) levied on plant and machinery such as tractors, harrows and ploughs has made it less affordable.



3.8.2 Access to Government subsidized fertilizer

Access to government subsidized fertilizer among farmers stood at 69.7 percent in September 2023 up from 49 percent and 43 percent in July and May respectively on account of automated registration and distribution. Large scale farmers (above 12 acres) enjoyed more access to the subsidized fertilizer (**Figure 14**). Nevertheless, some farmers expressed concerns about the effectiveness of the fertilizer subsidy in the absence of certified seeds and constant water supply given the fluctuations in the weather conditions. The Survey established that several areas were still considerably far from the National Cereals and Produce Board offices where the subsidized fertilizer is stocked thus limiting access. The high supply of subsidized fertilizer is a strong indicator of the Government's commitment to enhance food security through improved yields. Farmers expect higher levels of output particularly maize in the next harvest given the different varieties being provided. The Survey noted that the triple NPK (NPK 17.17.17) fertilizer was more effective given the balanced proportions of nitrogen, phosphorus and potassium which supported different crops at different stages from planting, leave formation and sweetening of fruits. Other fertilizer types observed in the field include; Kynoch 16:29:2, lime (calcium carbonate) among others. The Survey noted that the Government had enough stocks at the National Cereals and Produce Board (NCPB) with a mix of both the high alkaline and high acidity fertilizers.

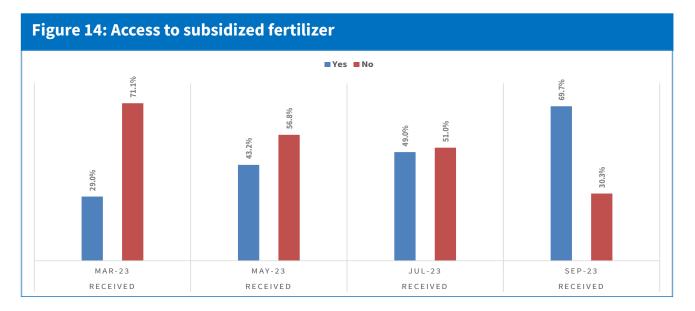


Table 1: Access to subsidized Government fertilizer

	Have you recently benefited from any Government subsidy on fertilizer?		
Category	No	Yes	Total
Large Scale (Above 12 acres)	17.78	82.22	100.00
Medium Scale (5 -12 acres)	34.78	65.22	100.00
Small scale (Below 5 acres)	45.16	54.84	100.00
Total	30.30	69.70	100.00

The 31.4 percent respondents without access to the fertilizer subsidy cited lack of finances to redeem the voucher, wrong timing, long queues, long distances and lack of title deeds as some of the barriers.

3.9 Factors affecting Marketing/Sale of **Farm Produce**

Regarding marketing/sale of farm produce, farmers sampled in both the July and September 2023 Surveys cited price fluctuations or 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 September Survey compared to July Survey. Other challenges cited include distance from markets, poor road network, limited demand and information asymmetry (Figure 15).

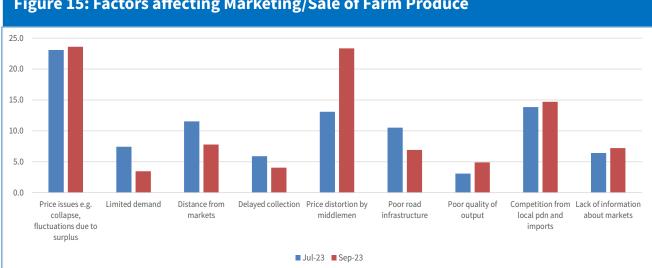


Figure 15: Factors affecting Marketing/Sale of Farm Produce

Contract farming has helped farmers in accessing farm inputs and selling the 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. However, the model has its own challenges because a sharp dip in the prices due to flooding of the market whenever farmers plant similar crops like cabbages 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 loan which varies by provider. The 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 16**.

Figure 16: Proportion of the respondents who borrowed to finance farming by source

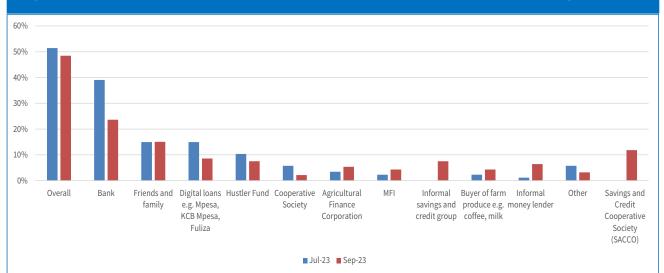
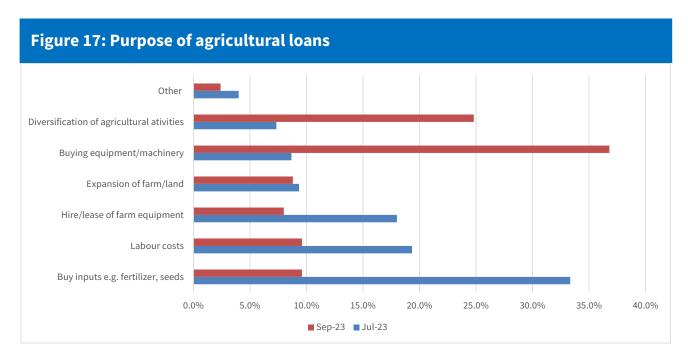


Table 2: Access to finance

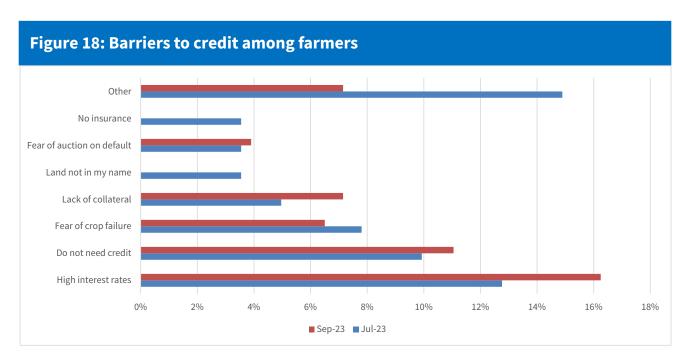
	Have you borrowed money to finance your farming activities in the last 12 months			
Category of farmer	No	Yes	Total	
Large Scale (Above 12 acres)	48.84	51.16	100.00	
Medium Scale (5 -12 acres)	52.17	47.83	100.00	
Small scale (Below 5 acres)	54.84	45.16	100.00	
Total	51.55	48.45	100.00	

The September 2023 Survey reported a slightly lower uptake of loans by farmers (48.5 percent) compared to July 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 10.3 percent and 7.5 percent in July 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 51.2 percent of the loans towards agriculture compared to 47.8 percent and 45.2 percent for medium and small scale farmers respectively. Borrowed funds are chaneled to a variety of uses as summarized in **Figure 17**.



A majority (36.8 percent) of the farmers sampled in the September Survey used the borrowed funds to buy farm equipment and machinery up from 8.7 percent in July. This could be rationalized by the need for machinery and equipment during the harvest season and land preparation for the new

season. This was followed by use of credit to diversify agricultural activities, purchase of farm inputs and labour costs. Access to agriculture finance is however not without challenges. The barriers to agriculture finance are summarized in **Figure 18**.

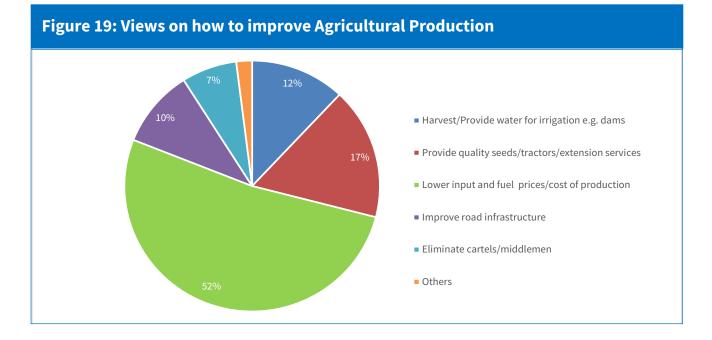


High interest rates was cited by 16 percent of the sampled farmers as the main barrier to agriculture finance. This was followed by 11.0 percent who voluntarily excluded themselves arguing that they

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 September 2023 Survey on how to improve agricultural production. Most farmers recommended lowering of input prices/cost of production (52 percent), provision of quality seeds, tractor and extension services (17 percent), and harvesting of rainwater alongside the provision of irrigation water through sinking of boreholes and dams (12 percent) to supplement rainfed agriculture. Farmers also recommended improvement of the road infrastructure (10 percent) to facilitate the transport of farm produce to the markets and elimination of middlemen (7 percent) who distort prices, among others (**Figure 19**)



5. CONCLUSION

This Agriculture Sector Survey report summarizes findings from the September 11 - 15, 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 230 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 non-vegetables especially cereals declined in September and are expected to decline further.
- Expectations about output and acreage of key food items in the next harvest remain positive
- Weather conditions, transport costs, and input prices continue to impact output and prices of key food items.

- Access to government subsidized fertilizer increased significantly to 69 percent in September 2023 relative to 49 percent in July 2023.
- Banks, friends/family, Sacco and the Hustler Fund were the main sources of credit for farmers, with the funds mainly used to finance farm implements, inputs and labour.
- Optimism regarding the possibility of higher economic growth improved.

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

- Address concerns about input costs and where possible issue the subsidized fertilizer alongside certified seeds and pesticides especially for armyworm infested areas
- Provision of relevant storage and drying facilities to ensure the farm produce are kept in good condition and last long enough for traders to sell when prices improve
- Harvesting of rainwater and irrigation e.g. through construction of dams.
- Enhance access to affordable credit and education to farmers
- Provision of region-specific fertilizers as per the soil tests the government is doing.

ANNEXES



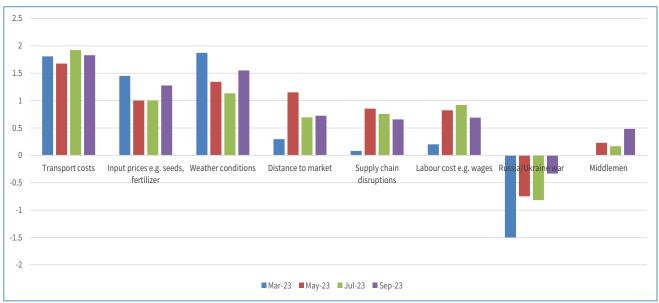
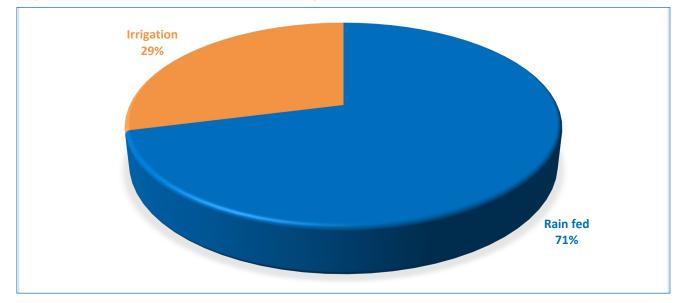


Figure 21 Main water source for farming





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