Final report

IGC International Growth Centre

Economic impacts of the COVID-19 pandemic on smallholder farmers

IGC Kenya

July 2020

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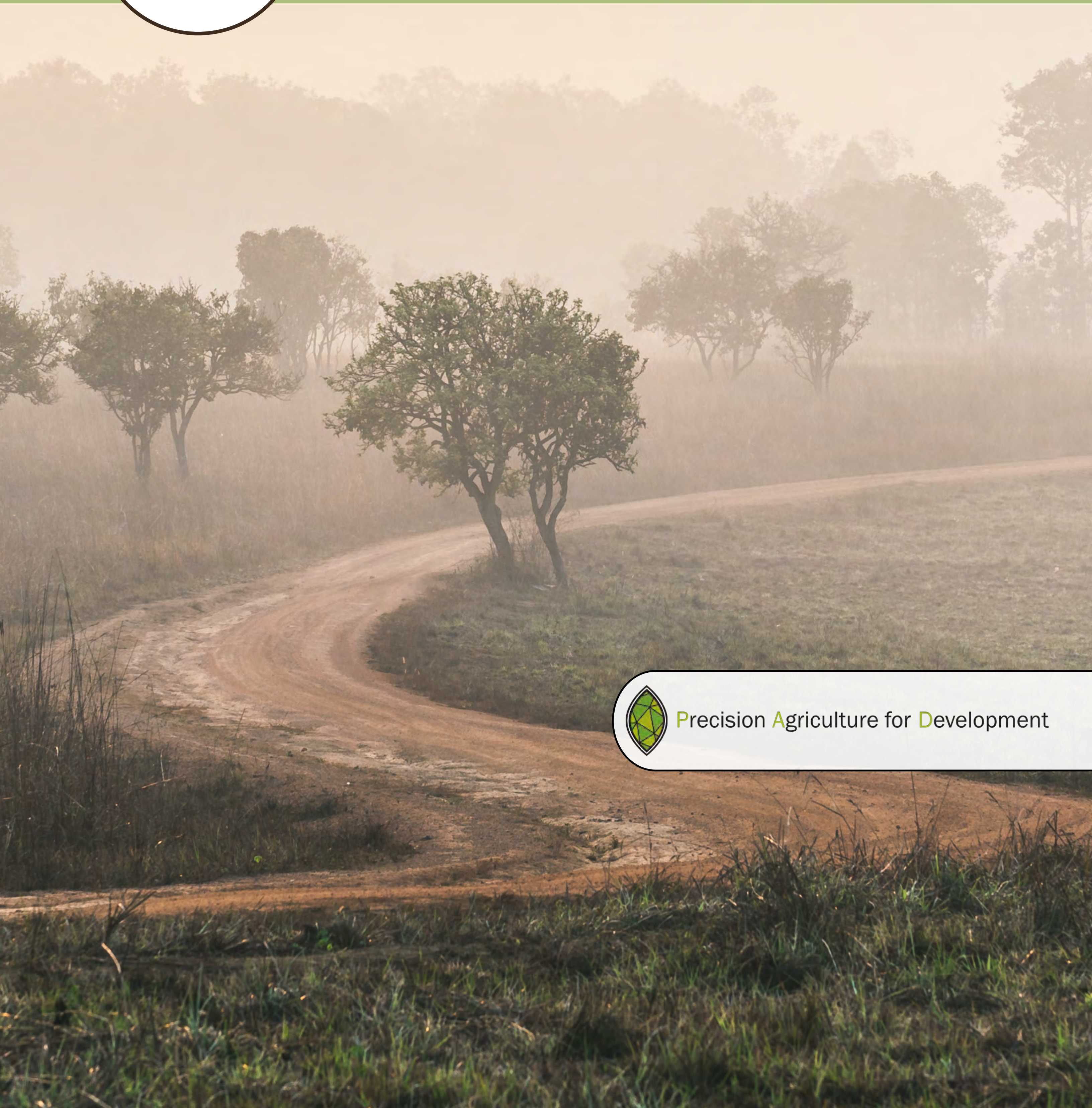


Precision Agriculture for Development

Contents

1 Executive summary

From April 30 to June 2, Precision Agriculture for Development (PAD) collected information on the social and economic impact of COVID-19 on 1,072 crop and dairy farmers and 483 agro-dealers across all regions in Kenya, focusing on the experiences of agro-dealers and farmers during the 2020 long rainy season.

Worryingly, the majority of farmers report financial distress and food shortages. More research is necessary to parse out the degree to which this is related to COVID-19 versus the seasonal agricultural cycle. However, 86% of farmers had difficulties in buying food due to market changes, 45% reported having to reduce the size or number of household meals, and 46% attributed decreased consumption to government-imposed mobility restrictions.

Additionally, both crop and dairy farmers and agro-dealers reported increased input prices. Moreover, agro-dealers reported lower foot traffic and sales compared to the same month last year, and the majority (approximately 62%) expect both footfall and sales to continue to be low. Eighty-one percent of farmers attributed decreased footfall to lower farmer income.

On a more positive note, the timing of the agricultural cycle combined with good rains meant most farmers had already planted prior to the outbreak of COVID-19 in Kenya and expected strong harvests: 52% of crop farmers expected to harvest more than last year, and 66% expected to sell at a higher price. While dairy farmers appeared to be harder hit with 58% expecting lower production and 72% expecting lower prices, this primarily reflects the fact that a few large players control the market for processed milk in Kenya, driving down the price, a dynamic which persists outside of COVID-19.

Finally, both dairy and crop farmers showed a strong knowledge of COVID-19 symptoms and prevention behaviors, as well as interest in learning more through digital updates. Agro-dealers also demonstrated a willingness to adapt to the changing circumstances: 31% reported implementing changes in stock, 29% reported implementing changes in sales, and 63% reported implementing changes in operations.

These results suggest a number of opportunities for improving farmer livelihoods. First, targeted financial support with direct provision of agricultural subsidies would help farmers pay for consumption staples and inputs, both of which have become more expensive even as incomes have dropped. Second, widespread mobile phone access offers an avenue for providing timely and accurate information regarding COVID-19. Finally, a digital channel to facilitation communication across the supply chain may assist agro-dealers in overcoming obstacles to meeting farmer demand.

2 Introduction

The rural poor in developing countries confront multiple economic and health risks arising from the COVID-19 pandemic and associated social distancing protocols. These include, *inter alia*, distortions in food and input prices, food shortages, disruption in the availability of inputs, and high levels of unemployment. In Kenya specifically, restrictions on human movement and trade, as well as the enforced closure of markets where a majority of rural citizens buy and sell produce, are likely to significantly impact food security and income for smallholder households.

To date, there have been 25,138 confirmed cases of COVID-19 and 413 deaths from COVID-19 in Kenya, making Kenya the 27th highest in Africa for per capita deaths and 25th for per capita cases (Worldometer). Additionally, Kenya has implemented a variety of measures with economic consequences, following the first confirmed case on March 13, 2020. These restrictions, which were announced by President Uhuru Kenyatta on March 15, included restrictions on travel into country for non-citizens and non-permanent-residents, as well as closures of schools, government meetings, and restriction on public gatherings (Daily Nation, Ministry of Foreign Affairs). On March 27, Kenyatta announced a nationwide curfew of 7pm-5am, which is still in effect (Reuters).[1]

The information presented here is from three different surveys in Kenya, which took place from April 30 - June 2, 2020, and focused on the experiences of agro-dealers and farmers during the 2020 long rainy season. The sample for the survey is drawn from existing users of PAD's advisory platforms. In total, 973 crop farmers across 44 counties were surveyed, as

[1] The curfew was revised to 9pm-4am on June 7, and this revised curfew was then extended most recently on July 27, for an additional 30 days.

well as 99 dairy farmers across two dairy cooperatives (Kabiyet Dairy Farmers Cooperative Society in the Rift Valley and Wakulima Farmers in Central region). Additionally, 483 agro-dealers across 40 counties were interviewed.

The data collected are intended to be useful and actionable for policymakers and practitioners as they design response strategies, including information campaigns, market-related advisory, restrictions on movement, and relief programs. A majority of poor Kenyans, and a significant share of participants in the agricultural sector, rely on the informal economy to procure and sell goods and services. However, informal economic activity is often poorly quantified by official surveys, and informational gaps undermine effective targeting of interventions towards the informal economy and those who depend on it.

While we do not have a nationally representative sample, this survey will cover all counties except those with largely urban populations. Kenya instituted county-specific lockdowns rather than locking down nationwide, as neighboring countries Rwanda and Uganda did; therefore, micro-level data from farmers and agro-dealers provides insights into the spatial variance of economic disruption and uncover information about effects on vulnerable populations.

We hope this information will prove useful in assessing need in the informal agricultural economy across Kenya, as well as for researchers and policymakers seeking to better understand the impact of global pandemics on smallholder farmers and agribusinesses, more generally. Additionally, given the relative leniency of the measures imposed in Kenya compared to other countries in East Africa, the results of the Kenyan survey may be informative for policymakers in countries that have imposed stricter quarantine measures as they move to phase out these measures during later stages of the pandemic.

3 Survey design and data collection

3.1 Crop and dairy farmer surveys

In 2018, PAD launched MoA-INFO, a free two-way SMS platform developed in collaboration with the Ministry of Agriculture. The service began in response to a national crisis surrounding Fall Armyworm (FAW), a novel and rapidly-spreading pest primarily impacting maize. Today, MoA-INFO advises farmers on eight different crops (maize, beans, Irish potatoes, sweet potatoes, pigeon peas, bananas, tomatoes, and sorghum) with one more crop (green grams) scheduled to come online in August 2020. The platform includes push messages, menu-based content, and interactive decision-support tools. There are 367,000 farmers across all 47 counties in Kenya registered on the platform. We combine engagement data with phone surveys to understand what is working and what needs to be improved. The platform also offers a convenient way of accessing a large number of farmers to provide advice and a better understanding of the situation on the ground across the country.

For the crop farmer survey, we aimed to survey 1000 farmers across 45 counties (excluding Nairobi and Mombasa).[2] The sample prepared for selection were 39,954 MoA-INFO farmer users who registered to receive cropping series farming advice messages for the 2020 long rainy season. The number of respondents allocated to each county was determined by the the share of farming population of that county over total farming population in all 45 counties, using information from Kenya 2019 census data set. Within each county, the sample selection was stratified by gender.

In total, we made 2542 phone calls to 1519 crop farmers and reached 1084 of them, with a 62% respondent pick-up rate. Among farmers who answered the call, 973 farmers consented to and completed the COVID-19 survey. The phone survey was conducted by 12 enumerators (of which 3 were managers overseeing collection and conducted a limited sample of surveys). Each respondent was called a maximum of 3 times (on average 1.9 times). Of calls answered, the average duration of the survey was 24.1 minutes. Backchecks were performed on a random sample of 10% of the surveys.

[2] Expecting a 60% survey completion rate, we prepared a call list with 1667 farmers.

In 2019, PAD began forming relationships with dairy cooperatives, with the intention of eventually developing and implementing a digital advisory service similar to MoA-INFO. From dairy cooperatives which we had previously initiated relationships, we selected two cooperatives for this dairy survey. Those cooperatives are located in two different regions in Kenya: Wakulima Farmers in Nyeri County (Central Region) and Kabiyet Dairy Farmers Cooperative Society in Nandi County (Rift Valley Region). We drew a random sample of 100 dairy farmers, of which 50 farmers came from the list of 25,441 members of Wakulima Farmers cooperative; of the total list, we narrowed the list of farmers to exclude those without cell phone numbers listed, as well as those who joined before 2017 in an effort to limit the sample to active members. The remaining 50 farmers were drawn from a list of 169 farmer-members provided to us by Kabiyet Dairy Farmers Cooperative Society. [3] We did not stratify the sample based on geography, but did do so by gender.

In total, we made 361 phone calls to 265 dairy farmers and reached 137 of them, with a 52% respondent pick-up rate. Among farmers who answered the call, 106 farmers consented to and completed the COVID-19 survey, and of these 99 (93%) were dairy farmers and were directed to continue the survey. The phone survey was conducted by 9 enumerators, with 2 managers overseeing collection. Each respondent was called a maximum of 3 times (on average 1.8 times). Of calls answered, the average duration of the survey was 24.7 minutes. Backchecks were performed on a random sample of 10% of the surveys.

While separate surveys were administered to crop and dairy farmers, many questions regarding consumption, life experiences, and knowledge about COVID-19 remained constant and, where possible, the results are presented together. Production results are shown separately. Demographics for the combined sample at the regional level are presented in Table 1.

[3] Expecting a 70% survey completion rate, we prepared a call list with 142 farmers.

Table 1: Demographic characteristics of farmers (crop and dairy) across regions

Region	N. of surveys	Share of male	Avg. age	Pct. growing maize
Central	192	51.04%	44.28	64.67%
Coast	65	52.31%	42.75	87.69%
Eastern	186	55.38%	40.68	70.97%
North Eastern	4	100.00%	45.50	100.00%
Nyanza	178	55.62%	39.47	87.08%
Rift Valley	294	56.66%	40.85	78.06%
Western	153	47.71%	40.65	97.39%

3.2 Agro-dealer survey

In May-August 2018, PAD surveyed (through a mix of phone and in-person surveys) approximately 1400 agro-dealers over 44 counties to confirm they were still in business. Following confirmation, they were subsequently invited to join the MoA-INFO platform and encouraged to invite their customers to join as well. PAD used publicly available lists to source for the sample, and also worked with AGMARK, a Kenyan NGO that trains agro-dealers in business.

For this agro-dealer survey, we planned to survey 500 agro-dealers. Expecting a low survey completion rate due to the busyness of agro-dealers, we prepared the call sample with all 1246 agro-dealers that were registered on the MoA-INFO platform in May 2020.

In total, we made 1998 phone calls to 1133 agro-dealers and reached 866 of them, with a 68% respondent pick-up rate. Among agro-dealers who answered the call, 483 agro-dealers consented to and completed this COVID-19 survey. The phone survey was conducted by 9 enumerators, with 2 managers overseeing collection. Each respondent was called a maximum of 3 times (on average 2.3 times). Of calls answered, the average duration of the survey was 26.1 minutes. Backchecks were performed on a random sample of 10% of the surveys.

Demographics for the survey sample at the regional level are shown in Table 2.

Table 2: Demographic characteristics of agro-dealer across regions

Region	N. of surveys	Share of male	Avg. age	N. of employees	Annual sales
Central	63	74.60%	47.49	2.11	921.80
Coast	32	75.00%	48.28	2.08	1174.07
Eastern	157	60.51%	43.54	1.91	1283.15
Nairobi	1	100.00%	68.00	6.00	8160.00
North Eastern	8	75.00%	45.63	1.83	323.14
Nyanza	44	79.55%	49.02	2.00	975.78
Rift Valley	78	76.92%	46.72	2.08	1554.55
Western	100	61.00%	44.06	1.96	1350.96

4 Survey results

4.1 Agriculture production - input (crop farmers)

The changes in agriculture production for crop farmers were modest, and crop farmers were optimistic about their harvests and output markets.

The majority of crop farmers grew maize as the most important crop (Figure 1), and most (84%) reported that they had already planted but not yet harvested (Figure 2). Perhaps for this reason, only 20% of farmers reported changing the crops grown on their farm in the last 30 days (Figure 3).

Figure 1: Primary Crop Grown (N=973)

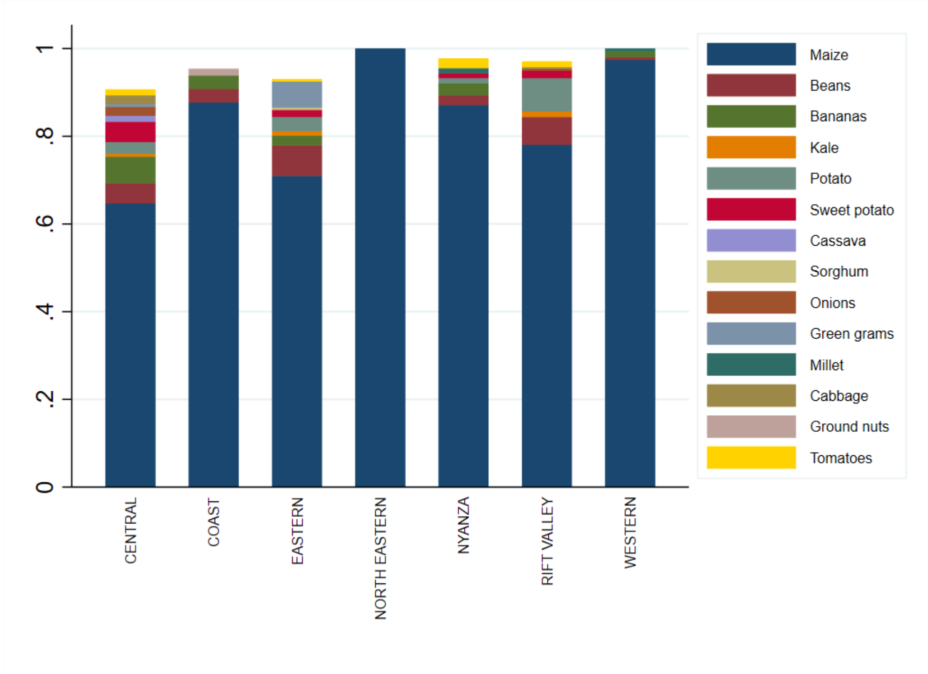


Figure 2: Crop Cycle Phase (N=960)

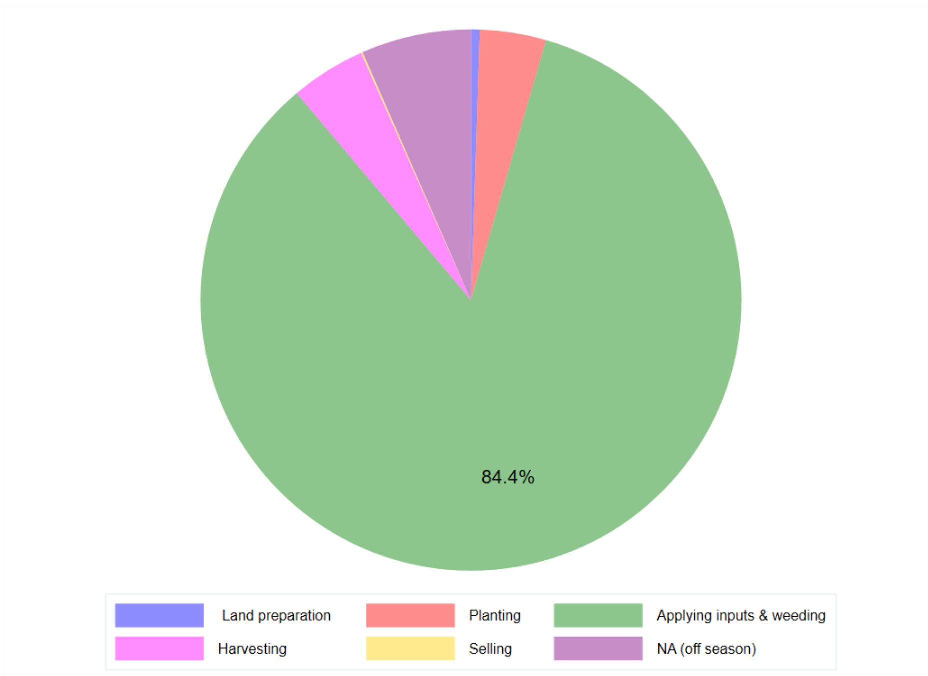
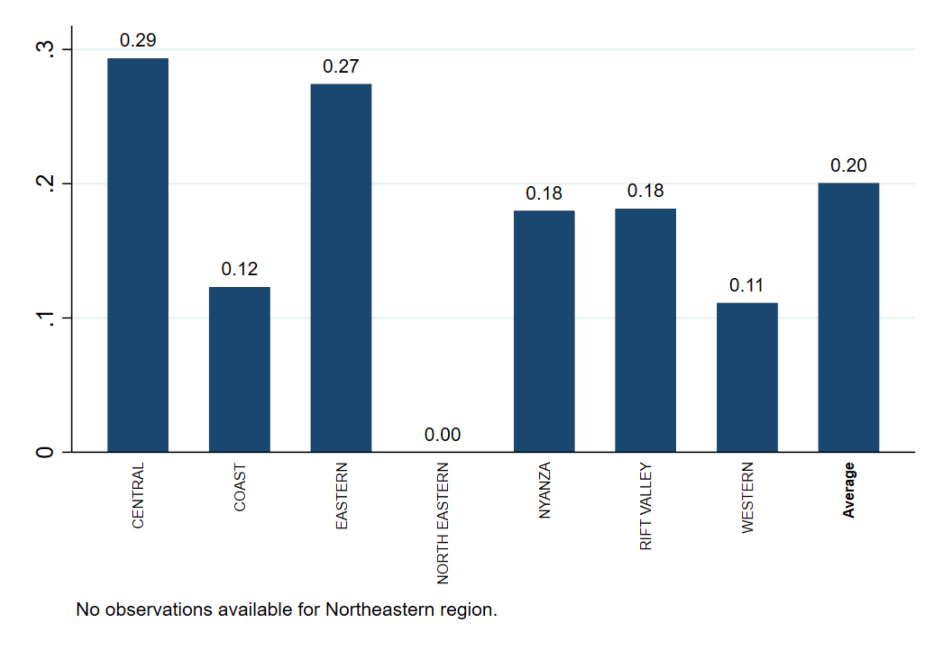


Figure 3: Changed crops grown on the farm in the last 30 days (N=973)



In total, 50% of crop farmers visited an agrodealer or market in the last two weeks, mainly buying fertilizer or pesticides. (Table) Farmers reported increases in input prices across the three main inputs: fertilizer (47%), seeds (60%), and pesticides (55%) (Figure).

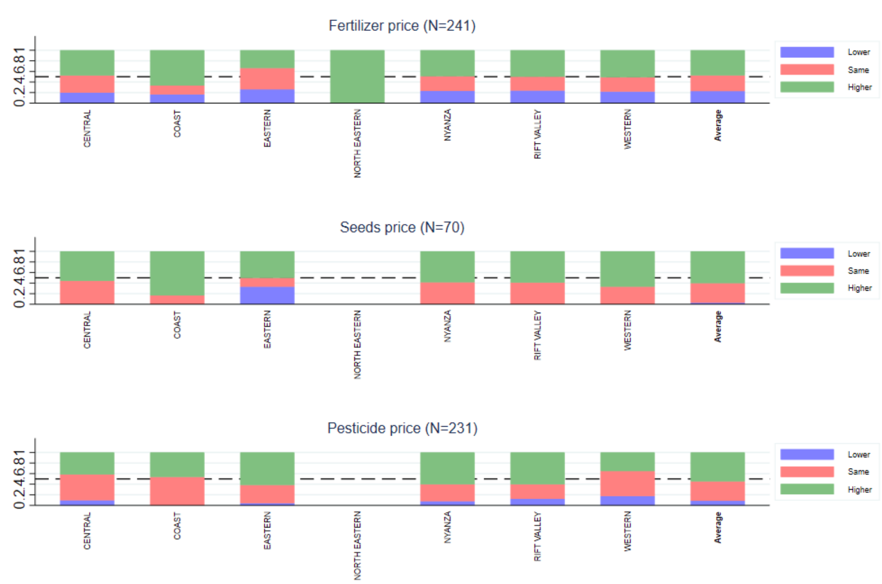
Table 3: Purchase of inputs (crop farming)

	Mean	SD	N
Visited an agro-dealer or market	0.50	0.50	960
Purchased fertilizer	0.52	0.50	478
Purchased seeds	0.15	0.36	478
Purchased pesticide	0.51	0.50	478
Quantity of fertilizer purchased (kg)	53.67	59.04	226
Quantity of fertilizer purchased (L)	0.80	0.54	20
Quantity of seeds purchased (kg)	9.55	16.15	72
Quantity of pesticides purchased (kg)	245.53	381.64	53
Quantity of pesticides purchased (L)	145.64	194.75	185
Unit price of fertilizer purchased (KSH/kg)	68.78	67.84	224
Unit price of fertilizer purchased (KSH/L)	25879.50	111608.19	20
Unit price of seeds purchased (KSH/kg)	6784.04	27684.16	72
Unit price of pesticides purchased (KSH/kg)	3127.15	4961.48	52
Unit price of pesticides purchased (KSH/L)	8409.26	46763.76	183

Time reference: in the last two weeks.

Quantity and price outcomes are winsorized at 1st percentile and 99th percentile.

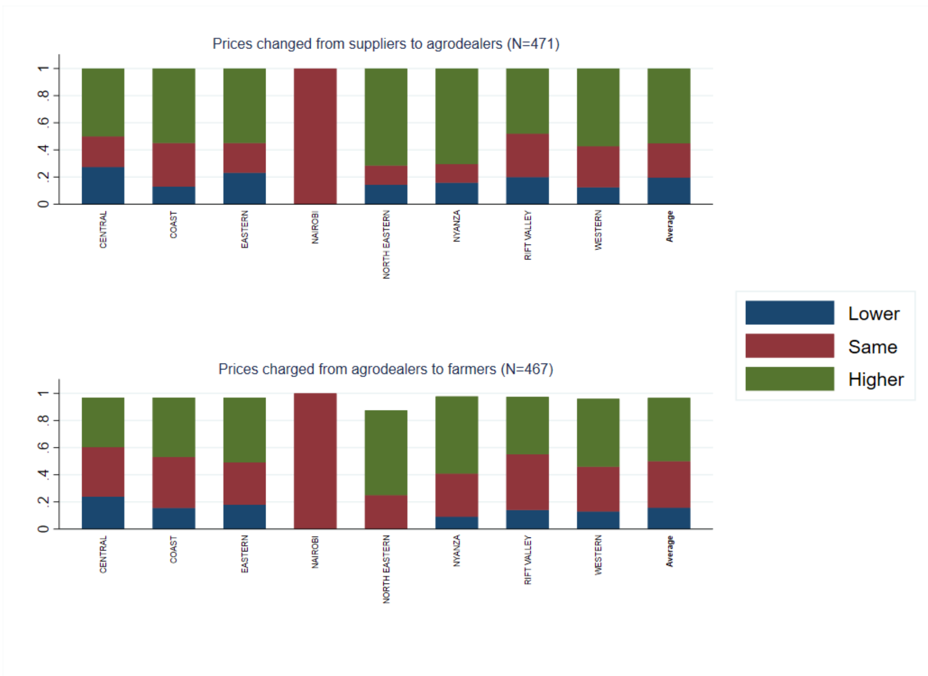
Figure 4: Input price increases (crop farming)



Time reference: relative to the same season in the last year.
No observations available for Northeastern region.

The increase in input prices is is corroborated by agro-dealers, 54% of whom reported that the prices charged by suppliers were higher, and 48% of whom reported charging higher prices to farmers (Figure 5).

Figure 5: Agro-dealer reported input prices: from suppliers, to farmers



Additionally, several other factors may influence the price charged by suppliers or agro-dealers (Table 4). Female agro-dealers and those who purchased their inputs primarily from retail agro-dealers (as opposed to from wholesale agro-dealers and manufacturers) were significantly less likely (at the 10% level) to report price increases from their suppliers, while those who reported frequent communication with suppliers via phone were significantly more likely (at the 10% level) to report price increases from their suppliers. Further research is needed to understand why this is the case, though one possible explanation is that agro-dealers who communicate more frequently with their suppliers are more likely to track prices over time and thus more likely to report an increase.

In terms of what influences the prices charged to farmers, the two most important factors appear to be whether the agro-dealer observed increased prices from his/her supplier, in which case these price increases appear to be passed on to consumers, and whether the agro-dealers increased stock, in which case he/she was less likely to increase prices charged

Table 4: Input market: Factors that correlated with suppliers and agrodealers charging higher input prices

	Supplier	Agrodealer	
	(1)	(2)	(3)
Agrodealer purchased from manufacturer	0.023	-0.023	-0.012
	(0.166)	(0.092)	(0.089)
Agrodealer purchased from wholesale agro-dealer	0.064	-0.077	-0.081
	(0.071)	(0.057)	(0.064)
Agrodealer purchased from retail agro-dealer	-0.095*	0.036	0.048
	(0.045)	(0.023)	(0.034)
Supplier delivered restocked inputs	-0.038	-0.003	0.000
	(0.043)	(0.023)	(0.029)
Communicate with supplier via phone	0.360*	0.033	0.032
	(0.177)	(0.029)	(0.028)
Female	-0.071*	0.040	0.040
	(0.034)	(0.042)	(0.043)
Agrodealer's shop is inside the village	0.005	-0.004	0.015
	(0.066)	(0.032)	(0.040)
Agrodealer's shop is at outskirts of the village	0.006	-0.034	-0.037
	(0.051)	(0.043)	(0.047)
Agrodealer's shop is in the main market in the city	0.071	0.066	0.056
	(0.115)	(0.046)	(0.046)
Suppliers charged higher price		0.742***	0.740***
		(0.032)	(0.036)
The daily shortened operation hours		0.003	0.005
		(0.008)	(0.007)
Shop creates the majority of income for agrodealers		-0.056*	-0.046
		(0.027)	(0.031)
Receive SMS from farmers >= 1 times per day		-0.035	-0.028
		(0.020)	(0.022)
Agrodealers own vehicle		0.064*	0.060*
		(0.030)	(0.029)
Agrodealers delivered inputs			-0.050
			(0.084)
Agrodealers reduced stock			0.018
			(0.075)
Agrodealers increased stock			-0.246***
			(0.039)
Agrodealers made bulk purchases for stock			-0.062
			(0.091)
Increased hygiene actions			-0.457
			(0.273)
Agrodealers maintained social distance			0.036
			(0.076)
Agrodealers extended credit to trusted farmers			0.103
			(0.076)
Agrodealers used cashless transactions			0.029
			(0.060)
N	340	339	339
R^2	0.019	0.549	0.559

Note: The dependent variables are (1) dummy indicator that suppliers charged higher input prices, and (2)-(3) dummy indicator that agrodealers charged higher input prices. The omitted groups are purchase from appointed distributor dealer and shop is in the main market in town. Fixed effects are at the region level. Standard errors are calculated as Huber-White heteroskedasticity-robust standard error: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

to farmers. Both of these correlations are significant at the the 1% level. Agro-dealers that reported owning vehicles appear to be slightly more likely to increase prices charged to farmers; one possible reason for this is that agro-dealers that are more financially stable may be able to charge farmers higher prices. However, this factor is only signifcant at the 10% level, and the magnitude of the effect is low.

4.2 Agriculture production - input (dairy farmers)

Overall, 65% of dairy farmers visited an agrodealer, and 35% of dairy farmers used vet services. The most common input purchases were dairy feed and mineral salts (purchased by 85% of farmers), whereas the most common veterinary service purchased was deworming treatment (35%) (Table 5). Dairy farmers observed similar increases in inputs, with price increases reported for dairy feed (74%), mineral salts (66%), and animal medicaton (52%) (Figure 6).

Table 5: Purchase of inputs and vet services (dairy)

	Mean	SD	N
Visited an agro-dealer or market	0.65	0.48	99
Purchased dairy feed or mineral salts	0.84	0.37	64
Purchased animal medication	0.33	0.47	64
Purchased milking salve	0.13	0.33	64
Purchased other inputs	0.17	0.38	64
Quantity of dairy feed or mineral salts purchased (kg)	82.14	68.12	42
Quantity of animal medications purchased (L)	0.47	0.53	20
Quantity of milking salve purchased (L)	0.50	.	1
Unit price of dairy feed or mineral salts purchased (KSH/kg)	149.62	159.14	41
Unit price of animal medications purchased (KSH/L)	8524.00	21763.27	20
Unit price of milking salve purchased (KSH/L)	560.00	.	1
Used vet services	0.35	0.48	99
Purchased deworming medication	0.37	0.49	35
Purchased acaricides for tick prevention	0.03	0.17	35
Purchased intramammary exams	0.06	0.24	35
Purchased antimicrobial drugs or antiparasitic agents	0.34	0.48	35
Purchased artificial insemination services	0.20	0.41	35
Purchased other services	0.09	0.28	35
Price of deworming medication (KSH)	800.00	877.50	13
Price of intramammary exam (KSH)	150.00	212.13	2
Price of antimicrobial durgs or antiparisitic agents (KSH)	1943.33	1692.41	12
Price of artificial insemination services (KSH)	1500.00	650.64	7

Time reference: in the last two weeks.

Inputs not included in the above table, since only a single observation was observed:

1 purchase of animal medication in grams (90g),

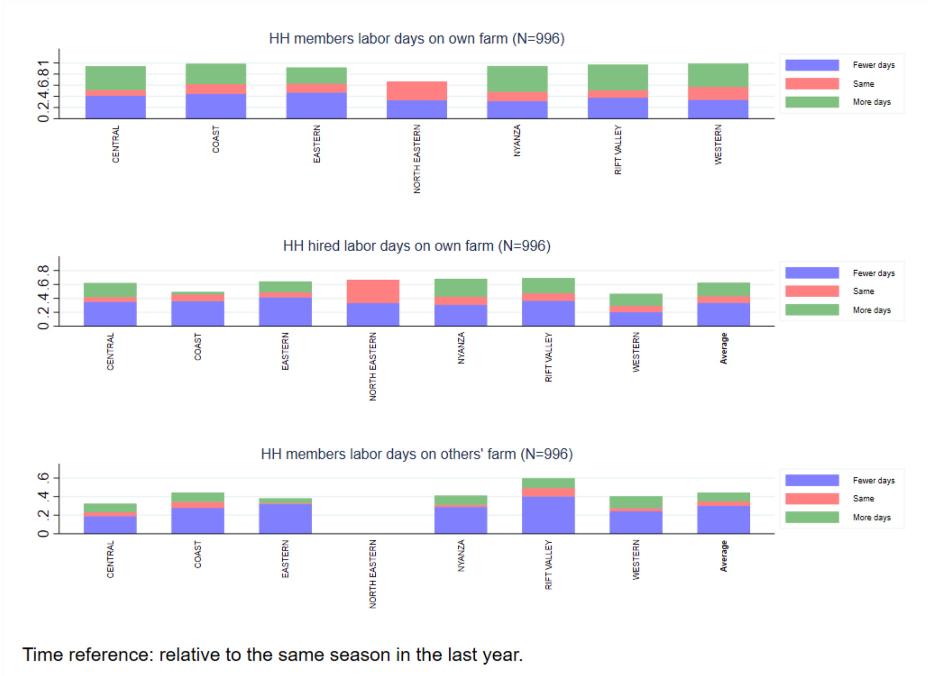
1 purchase of milking salve in ml (500 ml), and 1 purchase of acaricides.

Figure 6: Input price increases (dairy)

4.3 Agriculture production - labor (crop and dairy farmers)

For both crop and dairy farmers, there were some observed disruptions in the labor market, possibly due to mobility restrictions: respondents reported hiring laborers for fewer days on average, as well as working for fewer days than usual on others' farms (Figure 7).

Figure 7: Labor days



4.4 Agriculture production - harvest (crop and dairy farmers)

Of farmers that reported they were expecting to harvest this year, 52% of crop farmers expected to have more harvest than last year, and 66% of crop farmers expected to sell at a higher price than last year. Only 14% of crop farmers reported they expect they will not be able to sell some part of their harvest (Figure 8). Farmers indicated that expectations of improved harvests were premised on improved rainfall, and the primary reason given for expectations of higher prices was a higher observed market prices, which led farmers to expect higher prices for future harvests (Figure 9).

Figure 8: Expectations of prices, harvest amount, and input usage

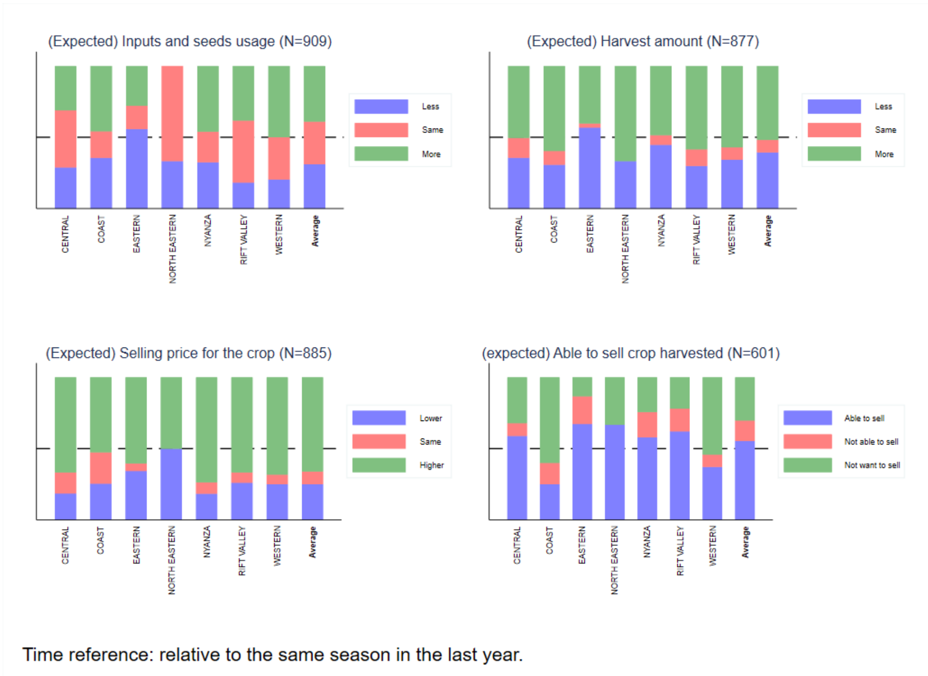
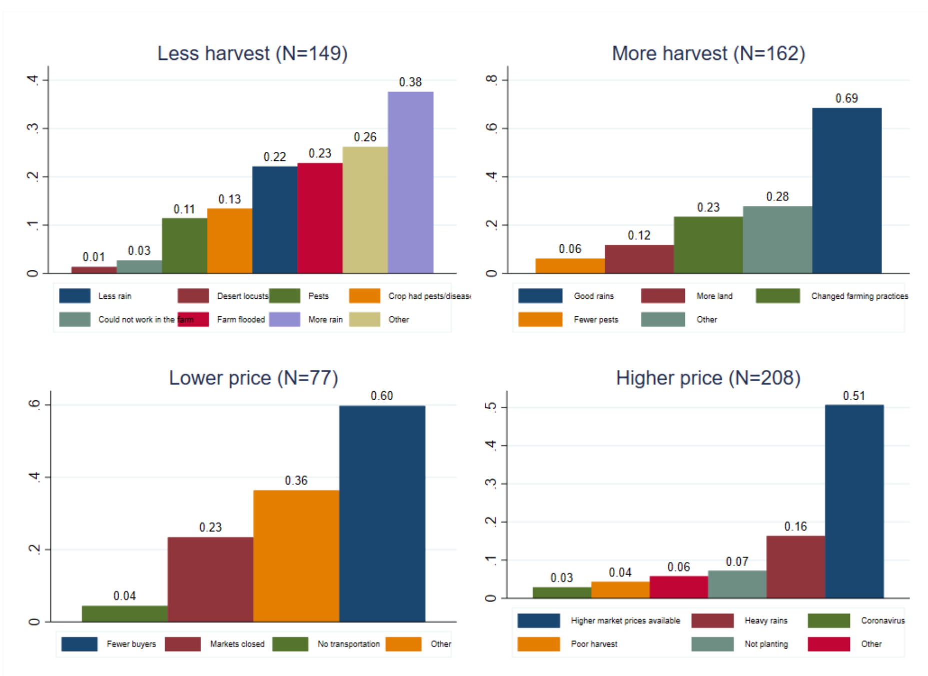


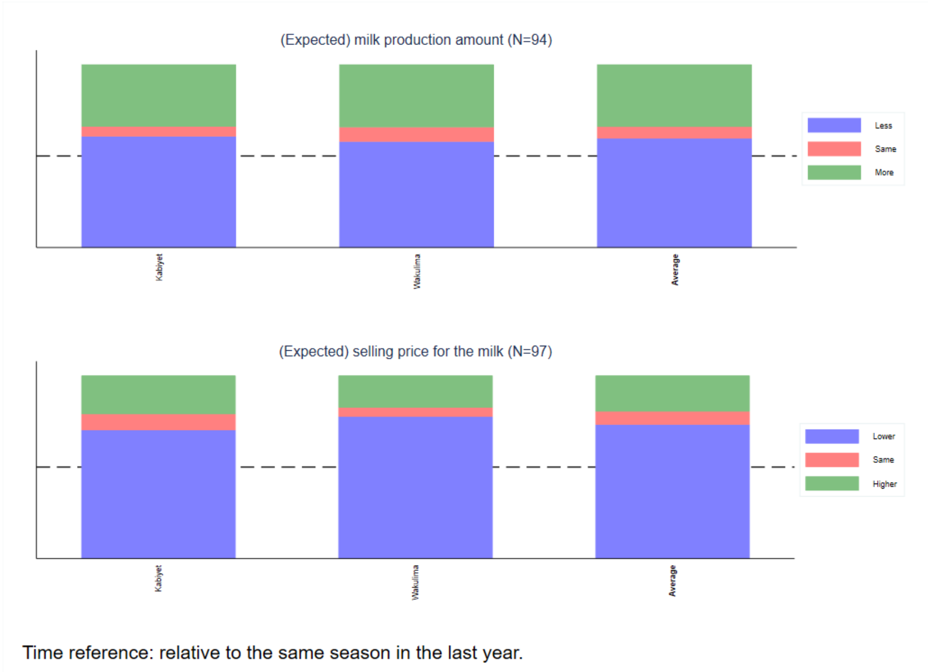
Figure 9: Reasons for high and low harvest and price expectations



Most dairy farmers expect to use fewer vet service but the same or more inputs (Figure 10). However, the majority (58%) of dairy farmers expected lower production than the same time last year, and 72% expected lower prices (Figure 11). That said, the most common reported reason for low milk prices was fewer buyers; this may reflect general dynamics in the dairy market, which is controlled by a few large players in Kenya, rather than being specific to COVID-19.

Figure 10: Expectations around usage of inputs and vet services

Figure 11: Expectations around production amount and milk prices



4.5 Life experience and consumption

Both crop and dairy farmers reported significant difficulties as a result of low income and high prices for food staples. The results presented in this section are combined results from the crop and dairy farmer surveys.

Additional research is needed, however, to determine whether these changes are the result of lean season, or the result of the pandemic specifically. Further rounds of surveying should also investigate whether financial difficulties faced by farmers are due to disruptions in the agricultural supply chain or the result of other non-farm income losses. Finally, future data collection efforts should be timed such that it is possible to separate pandemic-related effects from seasonal variation.

Around 38% of crop and dairy farmers reported that the majority (>=50%) of their daily household food consumption came from their own land, meaning at least 61% of farmers needed to buy the majority of their food in a store or market (Figure 12). Overall, 35%

farmers reported that they attempted to buy maize flour in the last 7 days (the primary staple in Kenya), at an average price of 64 Kenyan shillings per kg (Table 6).

In total, 86% of farmers had difficulties in buying food due to market changes (i.e., store closed, food shortage, higher price), and 86% reported price increase in maize flour (Figure 13). While price increases are not uncommon at this time of year (the 'lean season'), the reported effect was particularly dramatic: 45% reported having to reduce the size or number of household meals, and 46% specifically attributed this to mobility restrictions imposed by the government. 63% of crop and dairy farmers said reduced income meant they were not able to consume the amount of food they normally do (Figure 14).

Farmers employed several strategies to cover living expenses, including spending savings (74%), borrowing money (54%), selling assets (36%), or relying on the help of family members to cover living expenses (20%) (Table 7). Future research will investigate the extent to which these practices may have long-term effects; for example, further rounds of surveys will investigate whether or not the assets sold are productive (i.e. vehicles, livestock, or other assets used to generate income).

Figure 12: At least 50% of daily household food consumption from own land (N=1,064)

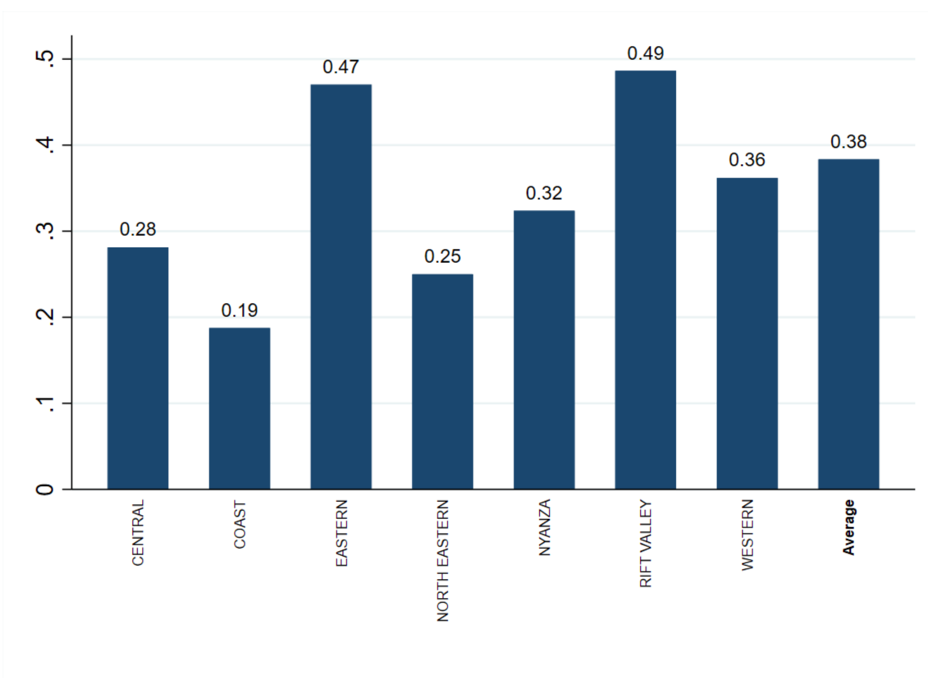


Table 6: Purchase of maize flour in the last 7 days

	Mean	SD	N
Attempted to buy maize	0.35	0.48	1070
Maize was available	0.94	0.24	370
Amount of maize flour purchased (kg)	23.16	34.79	307
Unit price of maize flour purchased (KSH/kg)	64.20	28.29	307

Time reference: in the last 7 days.

Quantity and price outcomes are winsorized at 1st percentile and 99th percentile.

Figure 13: Food market

Figure 14: Consumption-related challenges

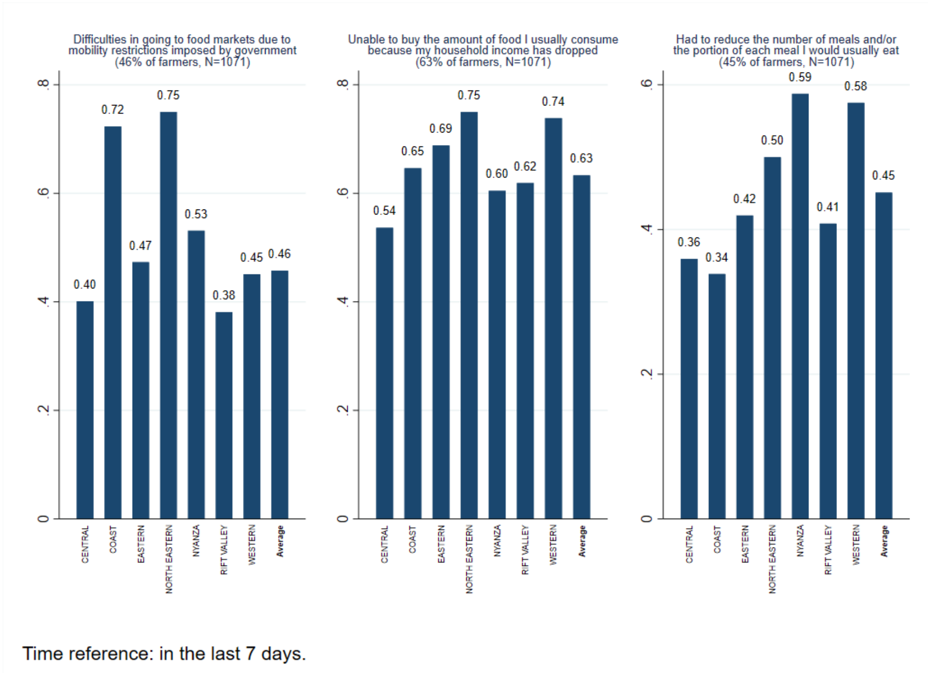


Table 7: Life experiences

	Mean	SD	N
Temporarily migrated back to my original home place	0.09	0.28	1072
Permanently migrated back to my original home place	0.01	0.10	1072
Let farm lay fallow (crop farmers)	0.21	0.41	973
Change crops grown on farm (crop farmers)	0.20	0.40	974
Sold animals (dairy farmers)	0.18	0.39	99
Started crop farming for supplemental income (dairy farmers)	0.14	0.35	99
Find another job/earning occupation	0.09	0.28	1072
Spent savings	0.74	0.44	1072
Borrowed money	0.54	0.50	1072
Sold assets	0.36	0.48	1072
Relied on family members	0.20	0.40	1072

Time reference: in the last 30 days

4.6 Gendered differences in production & consumption

A gender differential was observed in other data collected as well (Table 8). Compared to male farmers, female crop and dairy farmers reported spending significantly fewer days laboring on their own farms relative to last year. They also reported paying higher prices for fertilizer than male farmers and had lower expectations for the upcoming season's harvest. Finally, female farmers were more likely than their male counterparts to report relying on family members to cover living expenses, difficulties purchasing food due to high prices, and reduced meals (or reduced portion sizes). Further research is needed to determine whether these differences reflect differences in experience between male and female farmers in the sample (e.g., due to a selection effect in the type of male and female farmers who choose to use the platform), or rather reflect differences in knowledge about household affairs.

Table 8: Comparison between female and male farmers (crop and dairy)

	Female	N	Male	N	Diff.	P-Value	N
Agriculture inputs:							
Fewer total labor days on farm	0.38	440	0.32	519	0.06	0.06	959
Fewer total labor days by HH	0.38	438	0.32	517	0.06	0.04	955
Use fewer inputs	0.32	420	0.30	489	0.02	0.50	909
Unit price of fertilizer purchased (KSH/kg)	0.08	80	0.06	144	0.02	0.02	224
Unit price of pesticides purchased (KSH/L)	10.83	69	6.95	114	3.88	0.59	183
Unit price of seeds purchased (KSH/kg)	1.59	23	9.22	49	-7.64	0.28	72
Unit price of dairy feed/salts purchased (KSH/kg)	0.22	16	0.11	25	0.11	0.02	41
Unit price of animal meds purchased (KSH/L)	19.58	6	3.79	14	15.79	0.14	20
Agriculture outcomes:							
Expect harvest to be the same or higher	0.58	405	0.63	472	-0.06	0.09	877
Expect crop prices to be the same or higher	0.77	398	0.73	487	0.04	0.19	885
Consumption issues:							
Mobility restrictions	0.48	493	0.44	578	0.04	0.16	1071
Difficulties in buying food - market closure	0.48	493	0.43	578	0.04	0.15	1071
Difficulties in buying food - market shortages	0.41	493	0.43	578	-0.02	0.53	1071
Difficulties in buying food - high prices	0.78	493	0.73	578	0.05	0.05	1071
Difficulties in buying food - reduced income	0.64	493	0.62	578	0.02	0.53	1071
Reduced meals and/or meal size	0.49	493	0.42	578	0.08	0.01	1071
Strategies for covering living expenses:							
Spent savings	0.73	494	0.75	578	-0.02	0.42	1072
Borrowed money	0.55	494	0.53	578	0.02	0.51	1072
Sold assets	0.36	494	0.35	578	0.01	0.70	1072
Relied on family members	0.25	494	0.16	578	0.09	0.00	1072

4.7 Agro-dealers: decreases in footfall and sales

The majority of respondents reported lower footfall and sales, and expect this trend to continue. Sales were observed to be the same in Nairobi, but agro-dealers expect reductions in the future (Figure 15). The most common reason for diminished farmer footfall offered by agro-dealers — cited by 81% of agro-dealers interviewed — was that farmers had insufficient resources to purchase inputs. Agro-dealers tried to address this perceived constraint on business by extending credit to trusted farmers. Social distancing was the primary reason given for decreased sales (54%). Low availability and high cost of inputs were also cited as reasons (39% and 33%, respectively) (Figure 16).

Additional factors may influence agro-dealer footfall and sales (Table 9). The most rural agro-dealers - i.e., those with shops in the outskirts of the village, rather than inside the village or in the main marker - appear to be the hardest hit: they were sigificantly less likely to report increased footfall at the 1% level, signifcantly less likely to report increased sales at the 10% level, and significantly more likely to report decreases in customers at the 5% level. Those with shops inside the village observed significant decreases in customers, but the impact of their location on actual footfall and sales was statistically indistinguishable from zero.

Adept use of technology also appeared to have a positive impact on business, with agro-dealers who reported communicating with farmers via SMS more than once per day reported statistically significant (at the 1% level) higher customer flow. However, the use of M-PESA, the mobile money platform operated by Safaricom, Kenya's largest mobile operator, to conduct cashless transaction seems to have mixed effect: those who used cashless sales reported increased sales but fewer customers, and were more likely to report that they expected the would be unable to meet farmer demand. This may be an example of reverse causation, with agro-dealers who saw greater decreases in customers and business with the implementation of social distancing regulations being more enthusiastic adopters of cashless transactions to keep business going.

Finally, agro-dealers who delivered inputs were less likely to report increased footfall, but more likely to report that they expect to be able to meet farmer demand. An optimistic take on this may be that agro-dealers may be adapting to the pandemic by shifting their business model, prioritizing delivery rather than foot traffic. Predictably, agro-dealers were more likely to report they could meet farmer demand, but interestingly were less likely to report increased footfall.

Figure 15: Changes in footfall and sales: expected and observed

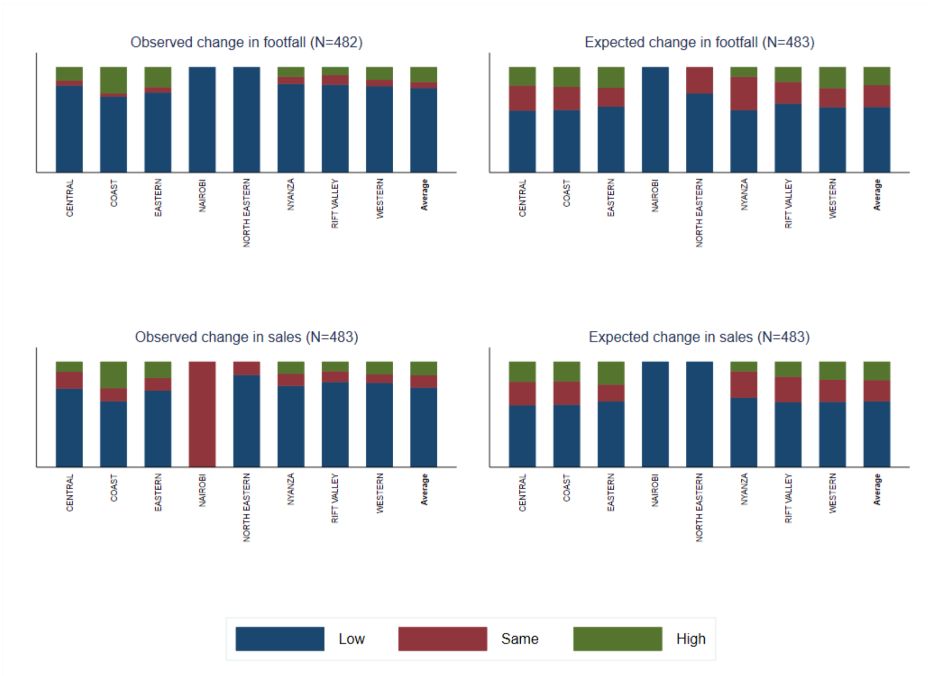


Figure 16: Reasons for changes in footfall and sales

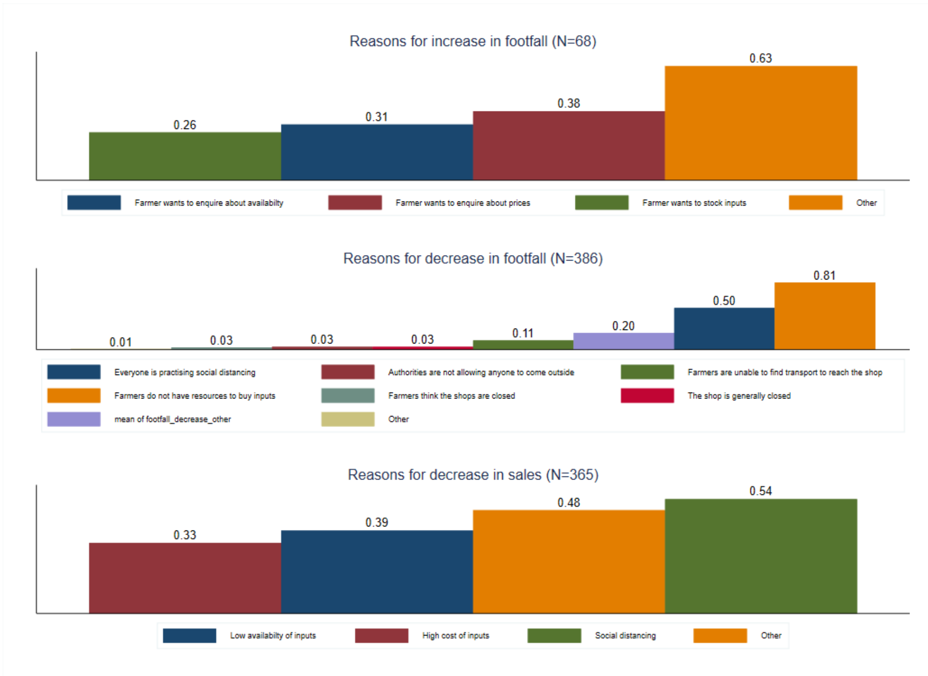


Table 9: Input market: Factors that correlated with agrodealers' sales

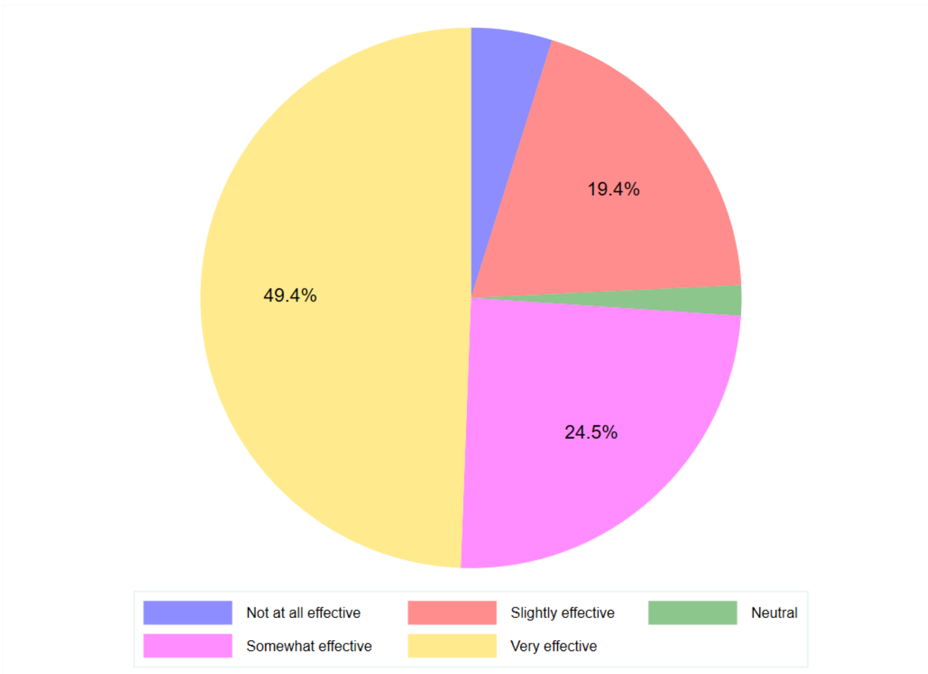
	Actual sales			Expectation		
	(1) More footfall	(2) More sales	(3) N. customers	(4) More footfall	(5) More sales	(6) Meet demand
Female	0.018	-0.025	178.475	-0.079	-0.021	-0.002
	(0.030)	(0.036)	(142.027)	(0.051)	(0.071)	(0.043)
Agrodealer's shop is inside the village	0.069	-0.035	-222.247**	-0.047	0.005	-0.077
	(0.104)	(0.092)	(67.097)	(0.046)	(0.057)	(0.055)
Agrodealer's shop is at outskirts of the village	-0.138***	-0.181*	-176.970**	-0.113	-0.083	0.093
	(0.036)	(0.078)	(66.936)	(0.103)	(0.088)	(0.051)
Agrodealer's shop is in the main market in the city	-0.012	-0.089*	-92.285	0.058	0.143	0.027
	(0.052)	(0.041)	(57.228)	(0.086)	(0.124)	(0.101)
The daily shortened operation hours	-0.015	-0.016*	18.483	-0.008	-0.014	-0.006
	(0.013)	(0.007)	(11.176)	(0.007)	(0.010)	(0.008)
Able to restock inputs	-0.062	-0.016	49.599	-0.244***	-0.129	0.379***
	(0.127)	(0.115)	(40.961)	(0.047)	(0.096)	(0.079)
Receive SMS from farmers >= 1 times per day	0.023	0.057*	154.994***	0.013	0.086*	0.009
	(0.029)	(0.027)	(34.664)	(0.022)	(0.040)	(0.056)
Agrodealers own vehicle	0.066	0.042	258.243*	0.072	0.048	0.063*
	(0.037)	(0.049)	(105.639)	(0.037)	(0.049)	(0.032)
Agrodealers delivered inputs	-0.156*	-0.238**	-220.102	-0.281***	-0.109	0.163**
	(0.068)	(0.074)	(148.266)	(0.069)	(0.085)	(0.057)
Shop creates the majority of income for agrodealers	-0.016	0.070	223.932	0.105	0.048	0.012
	(0.017)	(0.048)	(121.857)	(0.057)	(0.052)	(0.037)
Agrodealers charged farmers higher price	-0.050	-0.053	-126.124	-0.009	0.003	-0.088
	(0.066)	(0.036)	(140.089)	(0.055)	(0.036)	(0.053)
Agrodealers extended credit to trusted farmers	-0.029	-0.207**	-69.478	-0.122	-0.221*	0.023
	(0.083)	(0.073)	(51.554)	(0.117)	(0.092)	(0.072)
Agrodealers used cashless transactions	0.036	0.135***	-128.744**	-0.003	-0.074	-0.222**
	(0.043)	(0.025)	(38.453)	(0.043)	(0.057)	(0.068)
N	360	360	337	360	360	360
R^2	0.038	0.070	0.042	0.054	0.044	0.080

Note: Dependent variables are (1) agrodealers had more footfall in the last 1 month, (2) agrodealers had more sales in the last 7 days, (3) number of customers that purchased inputs in the last 7 days, (4) agrodealers expect to have more footfall for the next week, (5) agrodealers expect to have more sales for the next week, and (6) agrodealers expect to be able to cover farmers' input demand for the long rainy season 2020 (current season). The omitted group is that shop is in the main market in town. Fixed effects are at the region level. Standard errors are calculated as Huber-White heteroskedasticity-robust standard error: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

4.8 Crop and dairy farmers' COVID-19 behavior, knowledge, and perceptions

One hundred percent of farmers have heard about COVID-19, and 97% reported practicing social distancing. Overall, most farmers (74%) reported that they approved of government measures to control the virus (Figure 17).

Figure 17: Perceptions on the effectiveness of gov. imposed COVID-19 measures (N=330)



Farmers had strong knowledge of COVID-19 symptoms: "fever", "dry cough", and "difficulty breathing" were the top 3 most commonly listed symptoms (Figure 18). Farmers listed "maintaining social distance", "wearing a mask", and "washing hands often with soap" as the top 3 preventative behaviors, suggesting awareness of current public health advice (Figure 19).

Of those interviewed, 67% expressed concern that they would contract the virus, and 43% expressed concern that a family member would contract the virus. Only three out of 332 farmers asked this question said they were not concerned about COVID-19 (Figure 20).

Figure 18: Knowledge of COVID-19 Symptoms (N=375)

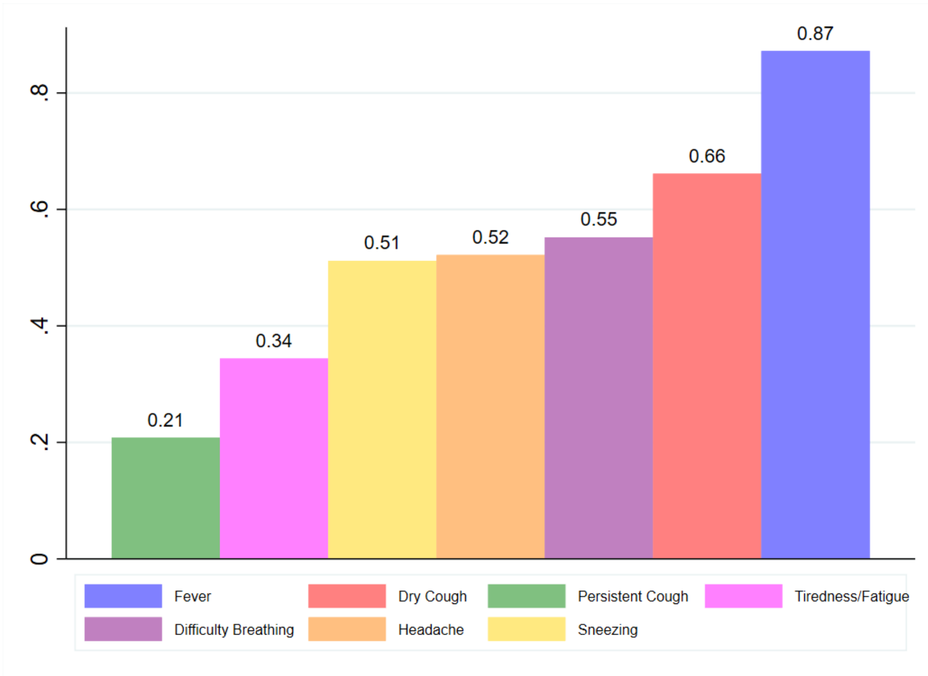


Figure 19: Knowledge of COVID-19 preventative behaviors (N=375)

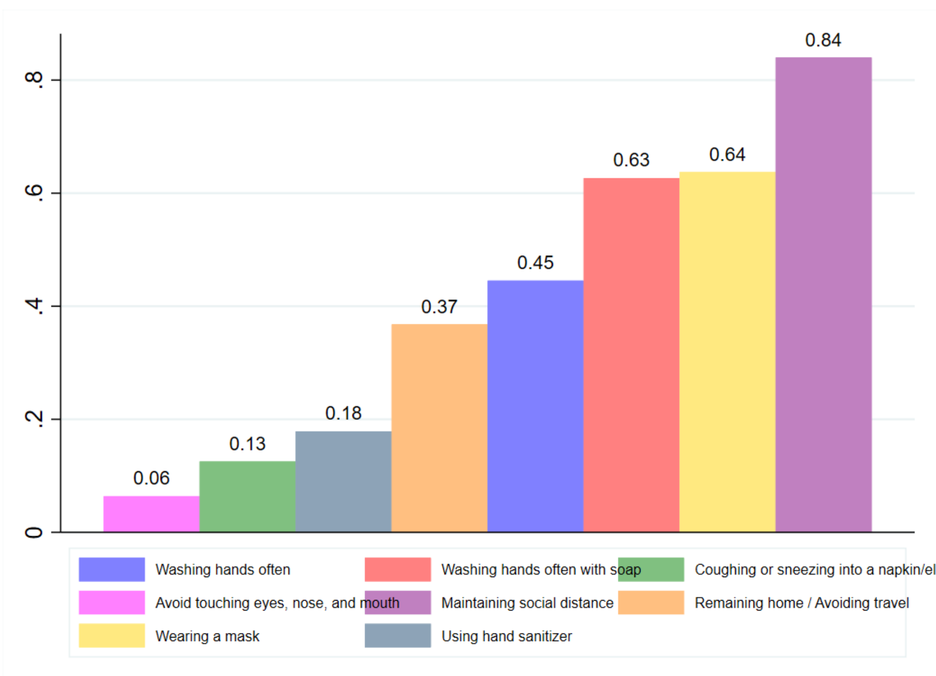
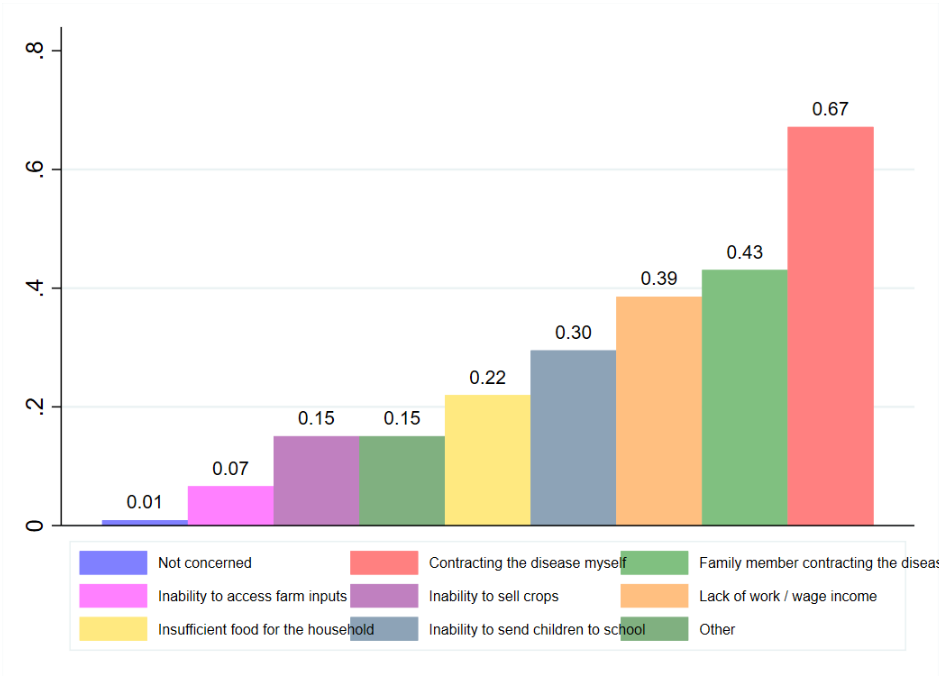


Figure 20: Crop and dairy farmers: COVID-19 related concerns



4.9 Agro-dealers: Adaptations and COVID-19 response

Agro-dealers reported that their largest concerns were insufficient customers (73%), followed by insufficient business (49%) (Figure 21).

Yet, agro-dealers continue to look for ways to best serve farmers, and adapt to an adverse business environment, with 29% reporting that they had implemented changes to sales (Table 10). Of the subset of agro-dealers who said they had made such changes, 21% reported allowing farmers to pay for inputs using mobile money. While payment via M-PESA - the mobile money platform operated by Kenya's largest mobile network provider - had been common throughout Kenya prior to the outbreak of COVID-19, these agro-dealers specifically mentioned instituting these transactions as a means of adapting to the pandemic (Figure 22).

Overall, 62% of agro-dealers reported changes in operations due to COVID-19, the two most commonly reported were availing farmers of hand washing options (50%) and encouraging mask use (34%) (Table 10, Figure 23). Moreover, while 26% of agro-dealers stated they were unable to purchase inputs from suppliers - and a majority of these agro-dealers (58%) attributed this difficulty to constrained supply of inputs - many reported making changes to how they stock inputs in order to meet farmers demand. Reported changes included using mobile money when transacting with suppliers, and changing the quantity, time frame, or delivery method for orders. Just over a quarter of agro-dealers (27%) reported that they foresee being unable to meet farmer demand (Figures 24 and 25).

Figure 21: Agro-dealers: COVID-19 related challenges (N=483)

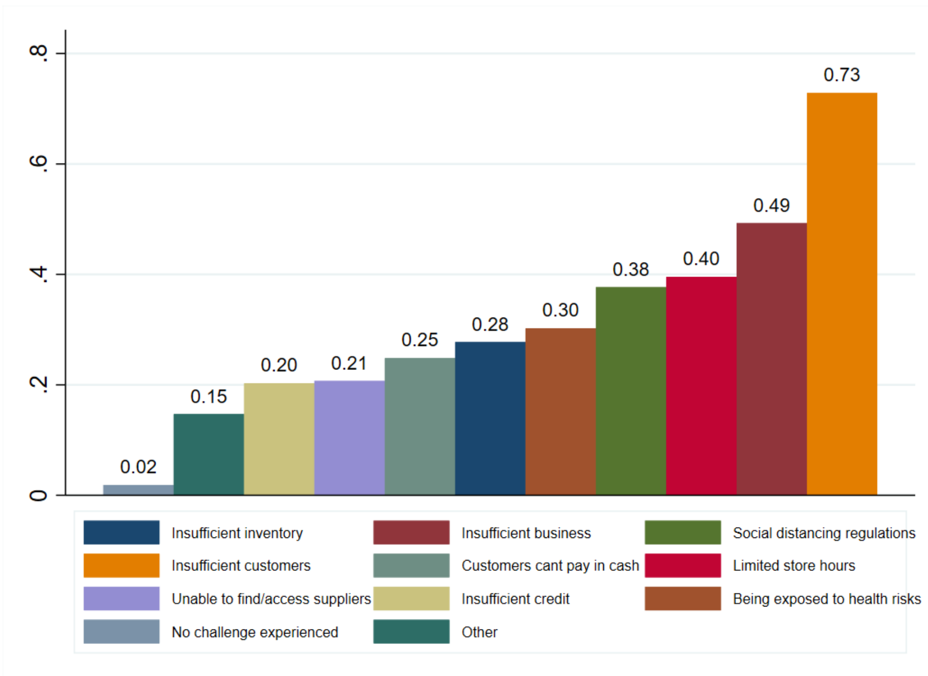


Table 10: COVID-19 related changes

	Mean	SD	N
COVID-19 related changes in stock	0.31	0.46	483
COVID-19 related changes in sales	0.29	0.45	483
COVID-19 related changes in operations	0.63	0.48	483

Figure 22: COVID-19 related changes to sales (N=140)

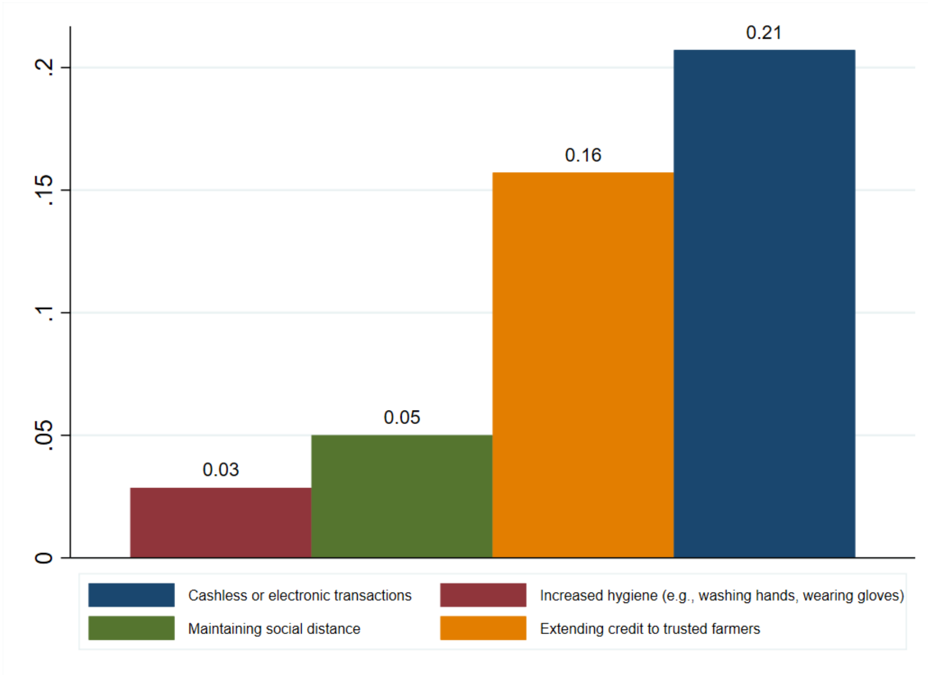


Figure 23: COVID-19 related changes to operations (N=302)

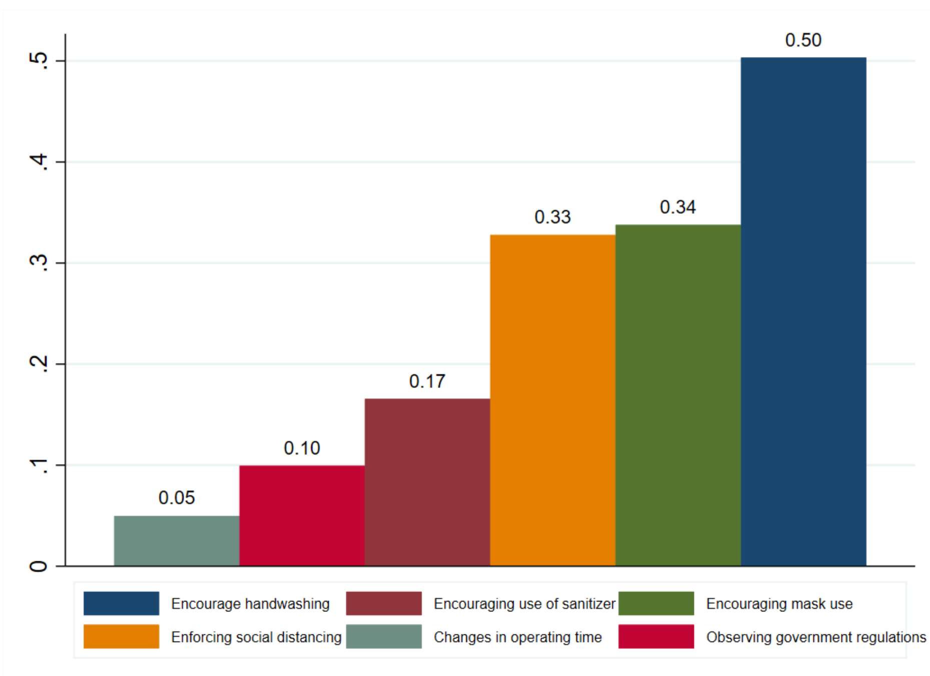


Figure 24: Reasons not able to purchase inputs

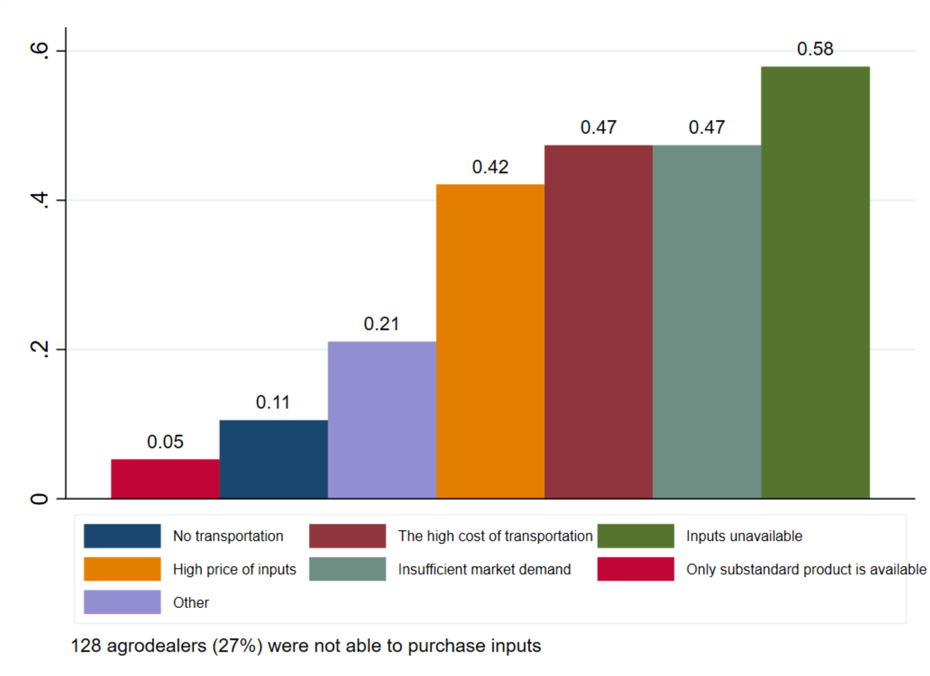
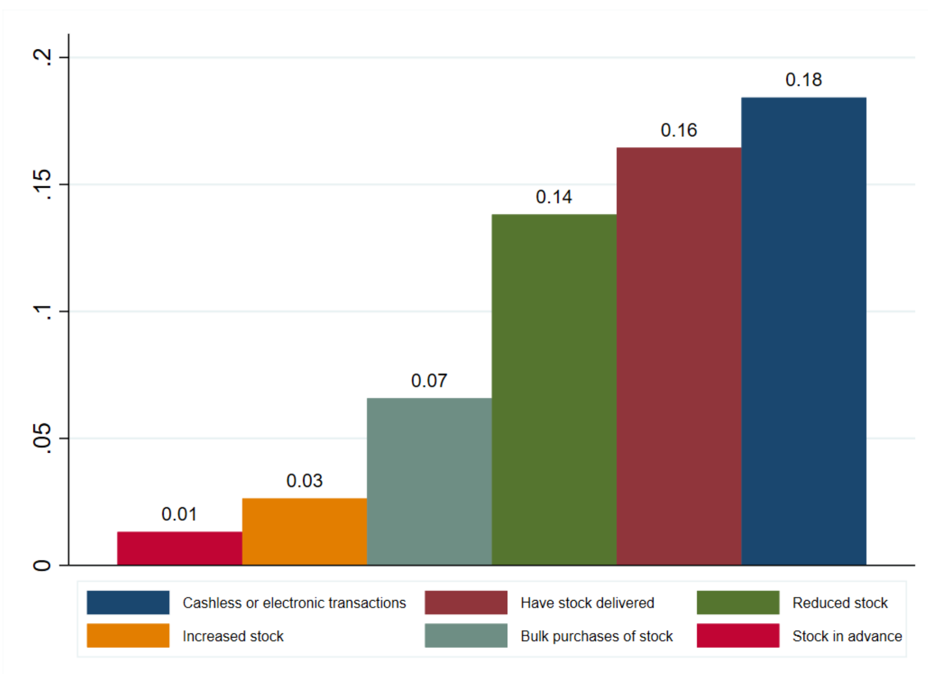


Figure 25: COVID-19 related changes to stock (N=152)



5 Contribution to other COVID-19 research efforts

This report adds to the findings of several other survey conducted across the African continent and globally in the March-July 2020. This was one of the first surveys to focus on the impacts of COVID-19 in Kenya specifically, as well as one of the first surveys focused on the agricultural supply chain, including both smallholder farmers and small-scale agro-dealers.

5.1 Contribution to Kenya COVID-19 research

In Kenya, the government-established National Coordination Committee on the Response to the Corona Virus Pandemic (NCCRCP) a conducted a survey in partnership with the Kenya National Bureau of Statistics (KNBS) to research the social and economic effects of COVID-19. The KNBS survey will be undertaken in six waves, of which the first two were completed on May 2-9 and May 30-June 6, respectively. This survey, which did not focus specifically on a rural or agriculture audience, discussed the impact of the pandemic on absences from work, travel delays, and rent payments. The KNBS survey found that 50% of first-wave respondents and 62% of second-wave respondents were absent from work due to COVID-19, with 78% unsure of when they would return. During the second wave of surveys, 27% reported decreased travel and 17% reported they were not able to travel at all; this is likely at least partially attributable to an increase in the cost of travel, reported by 59% of respondents. Finally, 37% of second-wave respondents reported missing rent (KNBS 2020).

The 60 Decibels survey, which surveyed 500 Kenyan crop farmers in June 2020 looked at similar outcomes to our survey and found largely similar results. Nearly all farmers interviewed for this survey reported making a change in at least one of five key areas: farming activities, including working on the farm, hiring labour, purchasing inputs, and harvesting or selling produce. In total, 90% of 60 decibel respondents reported decreases in hired labor and 44% reported working more days on their own farm, suggesting a substitution in the support of labor; for comparison, about one third of the farmers we surveyed reported reductions in hired labor, and 42% reported increases in hired labor. Additionally, 81% of 60 decibel respondents reported increases in the price of inputs, which is largely consistent with our results: at least 50% of the farmers we interviewed reported increases in specific key inputs, including minera salts, seeds, pesticides, dairy feed, and animal medication. However, 72% of 60 decibel respondents reported a decrease in prices and 65% spoke in reduced harvests. By contrast, while the majority of the farmers we interviewed had not yet harvested, (69%) reported that they expected the same or higher crop prices and 55% reported that they expected the same of higher harvest. Finally, 60 decibel farmers reported similar coping strategies to the farmers we interviewed, including selling assets, borrowing money, and spending savings (60 Decibels).

Additionally, the World Bank, in collaboration with the Kenyan National Bureau of Statistics (KNBS) and the United Nations High Commissioner for Refugees (UNHCR) and the University of California, Berkeley have designed and implemented a high-frequency phone survey with households, as well as two additional high-frequency surveys with formal firms and micro-enterprises in Kenya in order to gauge the socio-economic impact of COVID-19 in Kenya. Data collection started in mid-May and households are called every two months for three survey rounds, to track the impact of the pandemic over time. Preliminary results are largely consistent with our findings; for example, rural respondents in this survey also reported selling livestock or other assets and borrowing money to generate income. As in our survey, over 40% of farmers reported skipping meals.

Finally, Ipsos-Kenya, in collaboration with AgriFin, a Mercy Corps funded initiative, conducted surveys and interviews with 334 agro-dealers in June 2020. The results from this survey are largely consistent with ours. The Ipsos survey found that the COVID-19 crisis has negatively impacted agro-dealers, with a large portion experiencing a drop in business, which most attributed to a reduction in customer flow due to reduced incomes amongst farmers. Similarly, 80% of agro-dealers in our survey reported lower footfall and 76% reported lower sales, with 81% of those reporting lower footfall attributing this to decreased income among farmers. Worryingly, while 63% of agro-dealers in our survey reported changes in operations, the Ipsos report noted that 43% of agro-dealers they interviewed have no plan to face the crisis.

5.2 Contribution to other global COVID-19 research

In response to the COVID-19 pandemic, Innovations for Poverty Action (IPA) launched Research for Effective COVID-19 Responses (RECOVR), a multi-pronged initiative for generating and distributing rigorous data and evidence to mitigate the impacts of the crisis. As part of this initiative, IPA developed a panel survey, which has been conducted across 9 countries, including Mexico City, Cote d'Ivoire, Zambia, Ghana, the Phillipines, Rwanda, Burkina Faso, Sierra Leone, and Colombia.

In partnership with IGC, IPA has also designed a survey module that can be used to measure the impact of the crisis on a variety of economic agents, such as large companies, informal and small businesses, self-employed, workers, and farmers. Along with 31 other groups of researchers, this survey incorporated this questionnaire as part of the data collection effort.

6 Conclusion and policy recommendations

While many farmers remain optimistic about future harvests, there are signs of labour and input market disruptions, and increasingly stressed household consumption. Taken together, the data collected to date suggest several potential strategies to insulate smallholder populations and agricultural value chains that rely on smallholder productivity from the damaging impacts of COVID-19.

First, transfers and financial assistance will help to insulate poor farming households from the effects of increased market prices for maize flour and other foodstuffs, and help sustain demand for agricultural inputs to support the forthcoming planting cycle. In particular, a combination of targeted financial support (including loans, cash transfers, and wage increases) and direct provision of agricultural staples (i.e., wheat, rice, and pulses) at the household level would go a long way toward relieving the financial distress and consumption difficulties faced by Kenyan farmers.

Second, of the 86% of farmers who expressed an interest in digital updates on COVID-19, the majority were interested in public health updates and news-style updates, showing a desire for information on how to mitigate the pandemic.

Finally, establishing a channel to facilitate communication across the supply chain may help agro-dealers overcome obstacles to timely provision of inputs. In total 98% of agro-dealers reported communicating with suppliers via mobile phone, and 70% reported receiving messages from farmers about inputs at least once a day. A formal communication channel may enable farmers to communicate their needs and preferences, and better informed agro-dealers may be better positioned to meet farmer demand — for example through communicating farmer requests to suppliers, thus ensuring that needed inputs are available. Such a channel would assist agro-dealers in implementing changes to how they stock, which about one-third have already reported adopting, including using cashless transactions and having inputs delivered.

PAD began a second round of interviews on July 30, which return to the same sample of farmers and agro-dealers with a similar set of questions. In doing so, PAD plans to monitor the effects across the agricultural supply chain on an ongoing basis, as well as better understand the impacts of pandemic on Kenyan households versus other cyclical price and household effects. The second round of survey will also endeavor to collect additional information from farmers on several specific topics, including on intra-household gender dynamics and agro-dealer selection considerations, in an attempt to better understand the data from the first round of surveys and inform further interventions.

As the global health crisis continues, sustained data collection and analysis will be necessary in order to understand the evolving health, social, and economic impact for the rural poor globally. PAD's theory of change is based around evidence that well-sourced, timely and actionable information can empower farmers and policy-makers to act in the world to improve lives and secure livelihoods. This theory is core to the design and implementation of the services we deliver across all of our projects globally. Sourcing opinions and data from farmers to more accurately understand their challenges and aspirations is critical for delivering timely information for practical application in farmers' fields and households. The information collated through this survey and similar surveys in other geographies is intended to contribute to the evidence base in a rapidly shifting context with new and ill-defined challenges.

To this end, improved coordination between different organizations researching the effects of COVID-19 will be helpful in streamlining data collection, determining efficient allocation of resources, and sharing information. In India, the Bill and Melinda Gates Foundation has organized a learning network to facilitate such collaboration, and in Uganda, a group of researchers has established a slack channel for communicating survey findings with one another as well as with government ministries. PAD sees a clear benefit in establishing such communication channels for sharing data on COVID-19 within Kenya. More generally, we welcome feedback and are interested in partnering with other organizations, policymakers, and members of the development and research communities in the generation of rigorous and actionable evidence.

7 References

60 Decibels. “Your Impact, in One Place.” 60 Decibels, July 2020, app.60decibels.com/covid-19/agriculture.

The Daily Nation. "Kenya confirms first coronavirus case." Daily Nation, March 24, 2020. https://www.nation.co.ke/kenya/news/kenya-confirms-first-coronavirus-case-video-277924.

Innovations for Poverty Action. "Research for Effective COVID-19 Responses (RECOVR)." Innovation for Poverty Action, August 2020. https://www.poverty-action.org/recovr.

Ipsos, Mastercard Foundation, and Mercy Corps. "What Impacts Are We Seeing on Agro-Dealer Businesses in Kenya Under COVID-19?: Snapshot Report." Mercy Corps website, July 2020.

Kenya National Bureau of Statistics. "2019 Kenya Population and Housing Census Results." Kenya National Bureau of Statistics, November 4, 2019.

Kenya National Bureau of Statistics. "Survey on Socio Economic Impact of COVID-19 on Households Report: Wave 1." Kenya National Bureau of Statistics, May 15, 2020.

Kenya National Bureau of Statistics. "Survey on Socio Economic Impact of COVID-19 on Households Report: Wave 2." Kenya National Bureau of Statistics, June 30, 2020.

Ministry of Foreign Affairs. "Press Statement by H.E Uhuru Kenyatta." Ministry of Foreign Affairs, March 16, 2020. http://www.mfa.go.ke/?p=3115.

Obulutsa, George and Omar Mohammed. "Kenya extends curfew for a month as COVID-19 cases jump." Reuters, July 27, 2020. https://www.reuters.com/article/us-health-coronavirus-kenya/kenya-extends-curfew-for-a-month-as-covid-19-cases-jump-idUSKCN24S1SN.

The World Bank. "Monitoring COVID-19 Impact on Households and Firms in Kenya." The World Bank, June 3, 2020. https://www.worldbank.org/en/country/kenya/brief/monitoring-covid-19-impact-on-households-and-firms-in-kenya

Worldometer. “Coronavirus Cases,” August 10, 2020. https://www.worldometers.info/coronavirus.

8 Appendix: Survey Instruments

PAD COVID-19 SURVEY

Instructions to programmers:
Administer sections A-D and H. Administer one of sections E-G at random.

Instructions to surveyors:
Unless otherwise indicated, read the complete question as it is written and wait for the respondent to answer. If they are not understanding the question or unsure of how to respond, try to rephrase the question (while keeping the original meaning). If they are still unsure or are clearly misunderstanding, provide an example of the response (a few options in a list or scale).

KENYA MoA INFOSURVEY

Section 0: Pre-survey administration

N	Question	Answer	Adapting notes
01	Mobile number		
02	Respondent name		
03	Programme		
04	Surveyor name		
05	Date of survey		
06	Interview start time		
07	Interview end time		

Section A: Informed Consent

Question Number	Question	Answer	Adapting notes

A1	Read: Hello, my name is [surveyor name] and I am calling from the MoA Info service, provided by the Kenyan government and Precision Agriculture for Development. Am I speaking to [name in 02]? Note for surveyor: If the person you are speaking to is not [name in 02], please request to talk to [name in 02].	1. Yes → A2 2. No → A5 3. Name does not match database. -> A5 4. Don't know/prefer not to answer → A5	Adapt name of service and providing partners based on local context.
A2	Read: We are conducting a survey about the novel coronavirus and its impact on farmers. We would like to ask you some questions about the virus and your perceptions and response. The survey should take 15 minutes to complete and the information you provide will remain confidential and never be connected to you. Your responses will be stored safely and only accessed by a few researchers. Your participation may not benefit you directly, but may benefit others as your responses may inform the response to COVID-19. Your participation is completely voluntary, and there are no penalties for refusing to participate or stopping participation. If you have questions, you can ask them at any time. Please feel free to contact our customer care with any queries or concerns at 0798 739 889. Do you have any questions now?	1. Yes 2. No	Adapt name of service and providing partners based on local context.
A2.1	Do you understand everything I have explained?	1. Yes 2. No → A5	
A3	How old are you? *SURVEYOR NOTE:* If the respondent is younger than 18 years' old, thank them for their time, explain that you cannot survey youths and end the survey. If the respondent is older than 18 years' old, continue the survey. If respondent refuses to share their age, explain that you cannot continue without this. If they still refuse, enter '-98', thank them for their time and move to A5.	[Integer]	
A4	Do you agree to participate in this survey today?	1. Yes -> Next section 2. No-> A5	

A5	Reason for incomplete survey	1. Confidentiality concerns 2. No time 3. Respondent did not understand survey 4. Respondent too young or did not share age 5. Refused to confirm identity 6. Wrong respondent 7. Respondent did not pick up after 3 attempts 8. Bad signal/could not hear respondent 97. Other (specify) _____	

Section B: Demographics

<u>Read</u>: We will begin by asking you a few questions about yourself and your household. Please feel free to say "don't know" or "prefer not to answer" if you are not comfortable sharing.

N	**Question**	**Answer**	**Adapting notes**
B1	County		Select country specific and relevant location variables if unavailable in profiling data.
B2	Constituency		
B3	Ward		
B4	What village do you live in?	[Text]	
B5	Gender	1. Male 2. Female 98. Don't know/prefer not to answer	

Section C: Market

<u>Read</u>: In this section, we would like to ask you about your farming practices and activities. Please note that this is just based on your impressions, there is no right or wrong answer.

C1	What is the most important crop that your household grows (in the current season)?	1. Maize 2. Beans 3. Bananas 4. Kales 5. Potato 6. Sweet Potato 7. Cassava 8. Sorghum 9. Onions 10. Sugar cane 11. Green Grams 12. Millet 13. Cabbages 14. Ground nuts 15. Tomatoes 16. N/A→C15 97. Other, please specify→ C1.2 98. Don't know/prefers not to answer	
C1.2.A	Please specify	[text]	
The following questions refer to the crop you mentioned in C1 or C1.2.			
C2	In which phase of the crop cycle are you?	1. Land preparation 2. Planting 3. Crop on the farm: Applying inputs, weeding 4. Harvesting 5. Selling 96. None of the above (off-season) → C6 98. Don't know/prefer not to answer	
Note to surveyor: These next questions all ask about the respondent's activities relative to the same season last year. Please do not read the option choices out, but instead wait for the respondent to answer and then select the appropriate option. If the respondent does not understand, you can prompt them by asking, "how many days did you spend on this activity this season? Last year, did you spend the same days or more or less?			
C3	Relative to the same season in the last year, how many days did you and your household members spend on this activity on your farm/field?	1. I was not allowed to go to the farm this year 2. Much fewer days, lowest number of days in past 5 years 3. Fewer days 4. About the same 5. More days	

		6. Many more days, highest number of days in past 5 years 96. Not applicable 98. Don't know/prefer not to answer	
C4	Relative to the same season in the last year, how many days did you hire workers to work on this activity on your farm?	1. I was not allowed to hire other people on my farm this year. 2. Much fewer days, lowest number of days in past 5 years 3. Fewer days 4. About the same 5. More days 6. Many more days, highest number of days in past 5 years 96. Not applicable 98. Don't know/prefer not to answer	
C5	Relative to the same season in the last year, how many days did you and your household members spend on this activity on other people's farms (including plantations)?	1. I was not allowed to work on other people's farm this year 2. Much fewer days, lowest number of days in past 5 years 3. Fewer days 4. About the same 5. More days 6. Many more days, highest number of days in past 5 years 96. Not applicable 98. Don't know/prefer not to answer	
C6	Have you visited an agro-dealer or market to purchase any key agricultural inputs in the last two weeks?	1. Yes 2. No → C11	
C6A	Did you purchase all the inputs you were looking for?	1. Yes → C7 2. No → C6.2	

		98. Don't know/prefer not to answer	
C6.2	Why not?	1. The input was not available 2. The input was too expensive 3. The brand of the input I wanted was not available 97. Other	
C6.2A	If other, please specify.	[text]	
C7	Which key inputs have you purchased in the last two weeks? [Note: Please select maximum 3]	1. Fertilizer 2. Seeds 3. Pesticide 97. Other, please specify. 98. Don't know/prefer not to answer	Please add options for inputs according to project context.
C7A	If other, please specify.	[text]	
C8	How much of [key input] did you purchase?	[integer] [unit]	
C9	How much did you pay for that amount?	[Integer]	
C10	Relative to the same season last year, how does this price compare?	1. Much lower, lowest price in the last 5 years. 2. Lower 3. About the same 4. Higher 5. Much higher, highest price in the last 5 years 98. Don't know/prefer not to answer	
C11	Relative to the same season in the last year, how many seeds and inputs (e.g. fertilizer, chemicals) have you used (do you plan to use) for your farm for this crop?	1. Not allowed to go buy inputs 2. Inputs are not available 3. Much fewer 4. Fewer 5. About the same 6. More 7. Much more 96. Not applicable 98. Don't know/prefer not to answer	

C12	Relative to the same season in the last year, how much have you harvested (do you expect to harvest) for your farm for this crop?	1. Not allowed to go harvest. 2. Much less, lowest amount in past 5 years 3. Less 4. About the same → C13 5. More → C12.2 6. Much more, highest amount in past 5 years → C12.2 96. Not applicable 98. Don't know/prefer not to answer	
C12.1	Why did you harvest (do you expect to harvest) this amount?	1. Less rain 2. Farm was affected by desert locusts 3. Pests 4. Crop had pests/diseases 5. Could not work in my farm 6. Farm was flooded 7. More rain 97. Other 98. Don't know/prefer not to answer	
C12.1.A	Please specify	[text]	
C12.2	Why did you harvest (do you expect to harvest) this amount?	1. Good rains 2. Increased size of the land 97. Other	
C12.2.A	Please specify	[text]	
C13	Relative to the same season in the last year, how are /do you expect prices for this crop?	1. Much lower, lowest price in the last 5 years. 2. Lower 3. About the same → C14.1 4. Higher → C13.2 5. Much higher, highest price in the last 5 years → C13.2 98. Don't know/prefer not to answer	
C13.1	Why did you receive (do you expect to receive) this price?	1. Fewer buyers 2. Markets are closed 3. Could not transport my produce to the market 97. Other	

C13.1.A	If other, please specify.	[text]	
C13.2	Why did you receive (do you expect to receive) this price?	1. Food prices are higher 97. Other	
C13.2.A	If other, please specify.	[text]	
C14.1	Have you harvested in the last two weeks (at least a portion of your field)?	1. Yes 2. No 98. Don't know/doesn't want to respond	
C14.2	Have you sold any crops?	1. Yes 2. No → C14.4 98. Don't know/doesn't want to respond	
C14.3	Where did you sell it?	1. Local market 2. Middleman 3. Market outside the district 4. Individual consumers/neighbors 5. Government 97. Other	
C14.4	Why haven't you sold it?	1. Saving it for family consumption 2. Market is closed 3. No buyers in the market 4. Price offered was too low 5. Waiting for the price to get better 6. No transportation available 97. Other 98. Don't know/prefer not to answer	
C15	In the last 30 days, have you had to do any of the following? [select all that apply]	1. Temporarily migrated back to my original home place 2. Permanently migrated back to my original home place 3. Left your farm fallow 4. Change crops grown on your farm 5. Find another job/earning occupation	

		6. Spent savings to cover living expense 7. Borrowed money to cover living expenses 8. Sold assets to cover living expenses 9. Relied on the help of [extended] family members to cover living expenses 98. Don't know/prefer not to answer	
C16	Do you have space to store your harvest?	1. Yes → C16 2. No → Move to C18	Optional
C17	What storage space do you have? *Note: multiple options allowed.*	1. I can store it in the field 2. I can store it in my house 3. I can store in community place 4. I can store it at someone else's house 5. I can rent out a place to store my harvest 97. Others, specify 98. Don't know/Don't want to answer	Optional
C18	How much produce can you store? Hint: If you have 100 kg of maize, how many kg can you store on your compound?	1. 25% or less 2. 26-50% 3. 51-75% 4. 76% or more 98. Don't know/Don't want to answer	Optional
C19	What agriculture-related information do you need during the next month? *Note: multiple options allowed.*	1. Soil Preparation/Soil Testing 2. Seed Selection/Seed Treatment 3. Sowing/Transplanting 4. Nursery Management 5. Fertilizer Application 6. Pest and Disease Management 7. Weed Management 8. Irrigation 9. Harvesting 10. Post-Harvest Management 11. Crop prices/market demand 12. Weather 13. Government Schemes & Relief programmes 14. Labor availability	Add additional options depending on context

		15. Preparation of fertilizers/pesticides at home 16. Input availability and prices 17. Market/ agro-dealer closures 18. No preference 97. Other, please specify → C18.1 99. Does not require any information	
C19A	If other, please specify.		

Section D: Consumption

Read: We would like to ask you a few questions about food availability and consumption.			
D1	Read: In the past 7 days, have you or any household member experienced any of the following cases? [select all that apply]	1. Difficulties in going to food markets due to mobility restrictions imposed by government 2. Difficulties in buying food due to most food markets being closed 3. Unable to buy the amount of food I usually consume because of shortages in the markets I buy from 4. Unable to buy the amount of food I usually consume because of shortages in the markets I buy from 5. Unable to buy the amount of food I usually consume because the price of food was too high 6. Unable to buy the amount of food I usually consume because my household income has dropped	

		7. Had to reduce the number of meals and/or the portion of each meal I would usually eat 98. Don't know/prefer not to answer	
D2	Did you attempt to buy maize in the last 7 days?	1. Yes -> D3 2. No -> D7 98. Don't know/ prefer not to answer	For questions D2-D5, insert 1-3 staple food commodities
D3	Was maize available in the market/ store?	1. Yes -> D4 2. No ->D7 98. Don't know/ prefer not to answer	
D4	How would you describe the price of maize in the last 7 days?	1. Very low (lowest in 5 years) 2. Low 3. Normal 4. High 5. Very high (highest in 5 years) 98. Don't know/prefer not to answer	
D5	How much maize did you buy?	[Integer] [Unit]	
D6	What was the price that you paid for that amount?	[Integer]	
D7	What percentage of your daily household food consumption comes from your own land?	1. None 2. < 25% 3. 25-50% 4. 50-75% 5. >75% 98. Don't know/prefer not to answer	

Section E: Behaviour

Read: We would now like to ask you a few questions about your behavior in the last 7 days.			
E1	Have you been practicing social distancing to keep a distance of one meter from other people in the last 7	1. Yes 2. No 98. Don't know/prefer not to	Adjust wording of the question based on country-

	days? Please note that this refers to people outside your immediate residential household.	answer	specific guidelines.
E2	In which situations were you unable to practice social distancing? [Please select all that apply]	1. Work in the fields 2. Farming-related activities outside the house e.g. procuring input or selling crops 3. Other work 4. Going to the market for food 5. Going to the pharmacy 6. Going to the hospital / receiving medical treatments 7. Taking care of dependents 8. Meeting friends or relatives 9. Attending a function (wedding, funeral, temple) 10. Becoming tired of being indoors 97. Other, please specify → E4.1 98. Don't know/doesn't want to respond.	Add additional options depending on context
E2A	If other, please specify.	[text]	

Section F: Knowledge

Read: We would like to ask you some questions about the coronavirus.			
F1	Have you heard about the coronavirus or COVID-19?	1. Yes → F2 2. No → G1 98. Don't know/prefer not to answer → G1	
F2	What are the key symptoms of coronavirus? [Do not prompt the respondent. Select as many as they state]	1. Fever 2. Dry cough 3. Persistent cough 4. Tiredness/fatigue 5. Difficulty breathing 97. Other, please specify → F3.1 98. Don't know/prefer not to	

		answer	
F2A	If other, please specify. [<u>For surveyor:</u> separate options with a comma]		
F3	What are the top ways to prevent the spread of the coronavirus? [<u>For surveyor</u>: Do not read. Please select as many as they state]	1. Washing hands often 2. Washing hands often with soap 3. Coughing or sneezing into a napkin/elbow 4. Avoid touching eyes, nose and mouth 5. Keeping distance from others/ avoiding crowded areas/ avoiding physical contact (handshakes etc.) 6. Remaining at home/ avoiding non-essential travel 97. Other, please specify → F4.1 98. Don't know/prefer not to answer	
F4.1	If other, please specify. [<u>For surveyor:</u> separate options with a comma]		

Section G: Perception

<u>Read</u>: This first part is in reference to your own situation. Please answer from your own perspective with regards to yourself and your family.			
G1	What concerns you most about the coronavirus? [Select up to 3]	1. I'm not concerned about coronavirus 2. Contracting the disease myself 3. A member of my family contracting the disease 4. Not being able get inputs for my farm 5. Not being able to sell my crops 6. Not having enough work/wage income 7. Not having enough food for the household 8. Not being able send my children to school 97. Other, specify 98. Don't know/prefer not to	

		answer	
Read: This next part focuses on your perception of public health services and the government's reaction to the situation. Please answer honestly and remember that this will be kept completely confidential.			
G2	How effective do you think social distancing measures are (e.g., through a general lockdown) for slowing down the spread of the coronavirus?	1. Not at all effective 2. Slightly effective 3. Neither effective nor ineffective 4. Somewhat effective 5. Very effective 98. Don't know/prefer not to answer	
G3	What measures have been implemented in your village? [Please select all that apply]	1. Schools are closed 2. Non-essential businesses and shops closed 3. Instructed not to leave home 4. Transport services shut 5. Government offices are closed 6. Temples/religious areas closed 97. Other, please specify. 98. Don't know/prefer not to answer	Add additional options depending on context.

Section H

Read: We have a few final questions regarding your overall thoughts.			
H1	Would you be interested in receiving digital updates about the coronavirus (for example, a weekly pushcall) in addition to the information sources you already have?	1. Yes → H2 2. No → H3 3. Don't know/prefer not to answer → H3	
H2	What types of information do you think would be useful for you to receive. PAD will coordinate with our (government) partners and make every effort to provide you the information you request, but we cannot promise at this point whether and when we will add the content on coronavirus [Please select multiple]	1. Public health advice, including prevention and symptoms 2. Updates about government policies and measures, e.g. lockdown 3. News-style updates about number of cases, number of recovered, etc. in the country. 4. Agricultural/market related advisory 97. Other, please specify → H2.1	Add additional options depending on context.
H2.1	If other, please specify.	[text]	

H3	Do you have any other concerns or thoughts on this situation that you would like to share?	1. Yes → H4 2. No → H5	
H4	What are the concerns or thoughts you would like to share?	[text]	
Read: We would now like to ask you two short questions about your health.			
H5	In the last two weeks, have you experienced fever?	1. Yes 2. No 98. Don't know/prefer not to answer	
H6	In the last two weeks, have you experienced an unusual dry cough and/or difficulty breathing/shortness of breath?	1. Yes 2. No 98. Don't know/prefer not to answer	
Read: We have now completed the survey. Thank you for your time.			

Section Z: Survey Status

For Surveyor:			
Z1	Was survey completed?	1. Yes 2. No	
Z2	Should the respondent be called back?	1. Yes 2. No	
Z3	Are there any other further notes that you want to add to this survey? [If no, leave blank.]	[text]	

PAD COVID-19 SURVEY

Instructions to programmers:
Administer sections A-D and H. Administer one of sections E-G at random.

Instructions to surveyors:
Unless otherwise indicated, read the complete question as it is written and wait for the respondent to answer. If they are not understanding the question or unsure of how to respond, try to rephrase the question (while keeping the original meaning). If they are still unsure or are clearly misunderstanding, provide an example of the response (a few options in a list or scale).

KENYA DAIRY SURVEY

Section 0: Pre-survey administration

N	Question	Answer	Adapting notes
01	Surveyor name		
02	Respondent ID		
03	Respondent name		
04	Respondent phone number		
05	Call attempt		
06	Programme		
07	Date of survey		
08	Interview start time		
09	Interview end time		
11	What is the phone call status?	1 Call answered -> Section A 2 Call not answered -> Section Z	

Section A: Informed Consent

Question Number	Question	Answer	Adapting notes
A1	<u>Read</u>: Hello, my name is [surveyor name] and I am calling from Precision Agriculture for Development]. Am I speaking to [name in 02]? <u>Note for surveyor</u>: If the person you are speaking to is not [name in 02], please request to talk to [name in 02].	1. Yes → A2 2. No → Section Z 3. Name does not match database. -> Section Z 4. Don't know/prefer not to answer → Section Z	Adapt name of service and providing partners based on local context.
A2	<u>Read</u>: We are conducting a survey about the coronavirus, or COVID-19, and its impact on farmers. We would like to ask you some questions about the virus and your perceptions and response. The survey should take 20 minutes to complete and the information you provide will remain confidential and never connected to you. Your responses will be stored safely and only accessed by a few researchers. Your participation may not benefit you directly, but may benefit others as your responses may inform the response to COVID-19. Your participation is completely voluntary, and there are no penalties for refusing to participate or stopping participation. If you have questions, you can ask them at any time. Please feel free to contact our customer care with any queries or concerns at 0798 739 889. Do you have any questions now?	1. Yes 2. No	Adapt name of service and providing partners based on local context.
A2.1	Do you understand everything I have explained?	1. Yes 2. No → Section Z	
A3	How old are you? *SURVEYOR NOTE:* If the respondent is younger than 18 years' old, thank them for their time, explain that you cannot survey youths and end the survey. If the respondent is older than 18 years' old, continue the survey. If respondent refuses to share their age, explain that you cannot continue without this. If they still refuse, enter '-98', thank	[Integer]	

	them for their time and move to Section Z.		
A4	Do you agree to participate in this survey today?	1. Yes -> Next section 2. No-> Section Z	

Section B: Demographics

Read: We will begin by asking you a few questions about yourself and your household. Please feel free to say "don't know" or "prefer not to answer" if you are not comfortable sharing.			
N	**Question**	**Answer**	**Adapting notes**
B1	County		Select country specific and relevant location variables if unavailable in profiling data.
B2	Constituency		
B3	Ward		
B4	Village		
B5	Gender	1. Male 2. Female 98. Don't know/prefer not to answer	

Section C-Alternative: Dairy Farming

Read: In this section, we would like to ask you about your farming practices and activities. Please note that this is just based on your impressions, there is no right or wrong answer.			
C1	Are you a dairy farmer?	1. Yes → C2 2. No → D1	
Note to surveyor: These next questions all ask about the respondent's activities relative to the same month last year. Please do not read the option choices out, but instead wait for the respondent to answer and then select the appropriate option. If the respondent does not understand, you can prompt them by asking, "how many days did you spend on this activity this year? Last year, did you spend the same days or more or less?"			
C3	Relative to the same month last year, how many days did you and your household members spend	1. I was not allowed to go to the farm this year	

	practicing dairy farming or related activities on your own farm/field?	2. Much fewer days, lowest number of days in past 5 years 3. Fewer days 4. About the same 5. More days 6. Many more days, highest number of days in past 5 years 96. Not applicable 98. Don't know/prefer not to answer	
C4	Relative to the same month last year, how many days did you hire workers to help with dairy farming on your farm?	1. I was not allowed to hire other people on my farm this year. 2. Much fewer days, lowest number of days in past 5 years 3. Fewer days 4. About the same 5. More days 6. Many more days, highest number of days in past 5 years 96. Not applicable 98. Don't know/prefer not to answer	
C5	Relative to the same month last year, how many days did you and your household members spend on dairy farming or related activities on other people's farms (including plantations)?	1. I was not allowed to work on other people's farm this year 2. Much fewer days, lowest number of days in past 5 years 3. Fewer days 4. About the same 5. More days 6. Many more days, highest number of days in past 5 years 96. Not applicable 1. 98. Don't know/prefer not to answer	
C6	Have you visited an agrovet (including that attached to the dairy where you deliver milk) or market for purchasing any inputs/advice in the last two weeks?	1. Yes 2. No → CA	This section may need to be modified as per local context - what shops/places

			farmers visit for inputs and the different conditions they may face.
C6.1	Did you purchase all the inputs you were looking for?	1. Yes → C7 2. No → C6.2 98. Don't know/prefer not to answer	
C6.2	Why not?	1. The input was not available 2. The input was too expensive 3. The brand of the input I wanted was not available 97. Other, please specify.	
C7	Which key inputs have you purchased in the last two weeks? Note to surveyor: Do not provide option choices unless farmers are having difficulty understanding the question. Please select maximum 3.	1. Dairy feed /mineral salt 2. Animal medications 3. Milking salve 0. None (Haven't purchased any inputs in the last two weeks) 97. Other, specify. → C7.1 98. Don't know/prefer not to answer	
C7.1	If other, please specify.		
C8	How much of the [key input] did you purchase? Note to surveyor: Please remind the respondent that this is with regards to purchase over the last 2 weeks	[integer & unit]	
C9	How much did you pay for this amount? (in Ksh) Note to surveyor: If farmer does not wish to disclose, enter "-98"	[integer]	
C10	Relative to the same month last year, how does this prices compare?	1. Much lower, lowest price in the last 5 years. 2. Lower 3. About the same 4. Higher 5. Much higher, highest price in the last 5 years 96. Not applicable	

		98. Don't know/prefer not to answer	
CA	Have any of your cows fallen ill in the past two weeks?	1. Yes 2. No → **CC**	
CB	What illness did you observe?	1. Mastitis 2. Lumpy Skin Disease (LSD) 3. Foot-and-Mouth Disease (FMD) 4. East Coast Fever / Theileriosis 5. Brucellosis 6. Anthrax 7. Pneumonia 8. Nagana 97. Other, specify → **CB.1** 98. Don't know/prefer not to answer	
CB_1	If other, please specify.		
CC	Have you used veterinary services in the past two weeks?	1. Yes 2. No → **C11**	
CD	What service did you purchase?	1. Deworming medicine 2. Acaricide (for tick prevention) 3. Intramammary exams 4. Antimicrobial & antiparasitic drugs 5. Artificial insemination services 97. Other, specify	
CE	How much did you pay for that service? (in Ksh)	[integer]	
C11	Relative to the same month last year, how many dairy inputs (e.g. mineral salts/dairy feeds, animal medications, milking salve, etc.) have you used this year?	1. Not allowed to go buy inputs 2. Inputs are not available 3. Much fewer 4. Fewer 5. About the same 6. More 7. Much more 96. Not applicable 1. 98. Don't know/prefer not to answer	

C11	Relative to the same month last year, how often have you used veterinary/AI services this year?	1. Not allowed to go get veterinary services 2. Veterinary services are not available 3. Much fewer 4. Fewer 5. About the same 6. More 7. Much more 96. Not applicable 8. 98. Don't know/prefer not to answer	
C12	Relative to the same month last year, how much milk have you produced this year?	1. Not producing 2. Much less (lowers production in the last 5 years) 3. Slightly less 4. About the same 5. Slightly more 6. Much more (highest production in the last 5 years) 2. 96. Not applicable 3. 98. Don't know/prefer not to answer	
C12.1	Why did you harvest (do you expect to harvest) this amount?	1. Less rain 2. Farm was affected by desert locusts 3. Pests 4. Crop had pests/diseases 5. Could not work in my farm 6. Farm was flooded 7. More rain 97. Other 98. Don't know/prefer not to answer	
C12.1. A	Please specify	[text]	
C12.2	Why did you harvest (do you expect to harvest) this amount?	1. Good rains 2. Increased size of the land 97. Other	
C12.2. A	Please specify	[text]	
C13	Relative to the same month last year, how do milk prices compare?	1. Much lower, lowest price in the last 5 years.	

		2. Lower 3. About the same 4. Higher 5. Much higher, highest price in the last 5 years 98. Don’t know/prefer not to answer	
C13.1	Why did you receive (do you expect to receive) this price?	1. Fewer buyers 2. Markets are closed 3. Could not transport my produce to the market 97. Other	
C13.1.A	If other, please specify.	[text]	
C13.2	Why did you receive (do you expect to receive) this price?	1. Food prices are higher 97. Other	
C13.2.A	If other, please specify.	[text]	
C14.02	Have you sold any milk? (in the last two weeks)	1. Yes 2. No -> C14.04 98. Don’t know/doesn’t want to respond	
C14.03	Where did you sell it?	1. Local market/dairy cooperative 2. Middleman/broker 3. Market outside the district 4. Individual consumers/neighbors 5. Government 97. Other, please specify	
C14A.03	Other, please specify	[Text]	
C14.04	Why haven’t you sold it?	1. Saving it for family consumption 2. Market is closed 3. No buyers in the market 4. Price offered was too low 5. Waiting for the price to get better 6. No transportation available 97. Other, please specify	

C14A. 04	Other, please specify	[Text]	
C15	In the last 30 days, have you had to do any of the following? Note for surveyor: select all that apply. Please read the answer choices slowly and pause after each one to ask the farmer if they had to do this in the last 30 days.	1. Temporarily migrated back to my original home place 2. Permanently migrated back to my original home place 3. Sold animals 4. Started crop farming for supplemental income 5. Find another job/earning occupation 6. Spent savings to cover living expense 7. Borrowed money to cover living expenses 8. Sold assets to cover living expenses 9. Relied on the help of [extended] family members to cover living expenses 98. Don’t know/prefer not to answer	
C16	Do you store feed for your cows?	1. Yes → C13 2. No → D12	
C17	What storage space do you have? Note to surveyor: multiple options allowed. Do not read option choices, if the farmer is confused, ask them in what types of places they usually store the feed for their cows	1. I can store it in the field 2. I can store it in my house 3. I can store in community place 4. I can store it at someone else’s house 5. I can rent out a place to store my harvest 6. I do not store it in my house, but somewhere on my property 97. Others, specify 98. Don’t know/Don't want to answer	
C18	How much storage capacity do you have (in kgs)?	[interger]	
C19	What dairy-related information do you need during the next month? Note for surveyor: multiple options allowed. Don’t provide answer	1. Breed Selection/AI 2. Hygiene & Cleanliness 3. Animal Husbandry 4. Disease Management 5. Water Management	Add additional options depending on context

	choices but wait for the respondent to answer and then select the appropriate option. If the respondent is confused, then read each answer choice and pause for the respondent to answer.	6. Milk Prices/Market Demand 7. Weather 8. Government Schemes & Relief Programmes 9. Labor Availability 10. Preparation of Feed & Fodder at Home 11. Nutrition 12. Input Availability and Prices 13. Market/ Agro-Dealer Closures 14. No preference 97. Other, please specify → D19.1 99. Does not require any information	
C19.1	If other, please specify.	[text]	

Section D: Consumption

<u>Read:</u> We would like to ask you a few questions about food availability and consumption.			
D1	<u>Read</u>: In the past 7 days, have you or any household member experienced any of the following cases? Note: Surveyor please read out the options. Please read out each option and pause for the respondent to consider if this applies to them.	1. Difficulties in going to food markets due to mobility restrictions imposed by government 2. Difficulties in buying food due to most food markets being closed 3. Unable to buy the amount of food I usually consume because of shortages in the markets I buy from 4. Unable to buy the amount of food I usually consume because the price of food was too high 5. Unable to buy the amount of food I usually consume become my	

		household income has dropped 6. Had to reduce the number of meals and/or the portion of each meal I would usually eat 98. Don't know/prefer not to answer	
D2	Did you attempt to buy maize in the last 7 days? Note to surveyor: Please clarify that this can be from any source - market or ration shops, etc. Please clarify that this is not asking if they succeeded in purchasing, but if they had tried to purchase.	1. Yes -> D3 2. No -> D7 98. Don't know/ prefer not to answer	For questions D2-D5, insert 1-3 staple food commodities
D3	Was maize available in the market / store?	1. Yes -> D4 2. No ->D7 98. Don't know/ prefer not to answer	
D4	How would you describe the price of maize in the last 7 days? Note to surveyor: Don't read the answer options, if unclear then ask them to think about if prices are the same or higher or lower. If they say higher or lower, prompt them to ask if it is a little or a lot.	1. Very low (lowest in 5 years) 2. Low 3. Normal 4. High 5. Very high (highest in 5 years) 98. Don't know/prefer not to answer	
D5	How much maize did you buy?	[Integer] [Unit]	
D6	What was the price that you paid for that amount?	[Integer]	
D7	What percentage of your daily household food consumption comes from your own land or from your kitchen garden?	1. None 2. < 25% 3. 25-50% 4. 50-75% 5. >75% 98. Don't know/prefer not to answer	

Section E: Behaviour

<u>Read: We would now like to ask you a few questions about your behavior in the last 7 days.</u>

E1	Have you been practicing social distancing to keep a distance of two meters from other people in the last 7 days? Please note that this refers to people outside your immediate residential household.	1. Yes 2. No 98. Don't know/prefer not to answer	Adjust wording of the question based on country-specific guidelines.
E2	In which situations were you unable to practice social distancing? Note for surveyor: Please select all that apply. Do not read the answer choices. Wait for the respondent to answer and select the appropriate options. If confused, asked them to think about what activities they needed to do in which they had to come into close contact with other persons.	1. Work in the fields 2. Farming-related activities outside the house e.g. procuring input or selling crops 3. Other work 4. Going to the market for food 5. Going to the pharmacy 6. Going to the hospital / receiving medical treatments 7. Taking care of dependents 8. Meeting friends or relatives 9. Attending a function (wedding, funeral, temple) 10. Becoming tired of being indoors 97. Other, please specify → E4.1 98. Don't know/doesn't want to respond.	Add additional options depending on context
E2A	If other, please specify.	[text]	

Section F: Knowledge

Read: We would like to ask you some questions about the coronavirus.			
F1	Have you heard about the coronavirus or COVID-19?	1. Yes → F2 2. No → G1 98. Don't know/prefer not to answer → G1	
F2	What are the key symptoms of coronavirus? Note for surveyor: Do not read the answer choices. Do not prompt the respondent.	1. Fever 2. Dry cough 3. Persistent cough 4. Tiredness/fatigue 5. Difficulty breathing	

		6. Loss of smell/taste 7. Headache 8. Sneezing 97. Other, please specify → F2.1 98. Don't know/prefer not to answer	
F2A	If other, please specify. [For surveyor: separate options with a comma]		
F3	What are the top ways to prevent the spread of the coronavirus? Note to surveyor: Select all that apply. Do not read the option choices. Wait for the respondent to answer and select the appropriate option. If respondent is confused, ask them to think about what types of behaviors or actions they have heard about to prevent coronavirus.	1. Washing hands often 2. Washing hands often with soap 3. Coughing or sneezing into a napkin/elbow 4. Avoid touching eyes, nose and mouth 5. Keeping distance from others/ avoiding crowded areas/ avoiding physical contact (handshakes etc.) 6. Remaining at home/ avoiding non-essential travel 7. Use of a face mask 97. Other, please specify → F3.1 98. Don't know/prefer not to answer	
F3A	If other, please specify. [For surveyor: separate options with a comma]		

Section G: Perception

Read: This first part is in reference to your own situation. Please answer from your own perspective with regards to yourself and your family.			
G1	What concerns you most about the coronavirus? Note to surveyor: Select up to 3. Do not read the option choices. Wait for the respondent to answer and select the appropriate option.	1. I'm not concerned about coronavirus 2. Contracting the disease myself 3. A member of my family contracting the disease 4. Not being able get inputs for my farm 5. Not being able to sell my crops	

		6. Not having enough work/wage income 7. Not having enough food for the household 8. Not being able send my children to school 97. Other, specify 98. Don't know/prefer not to answer	
Read: This next part focuses on your perception of public health services and the government's reaction to the situation. Please answer honestly and remember that this will be kept completely confidential.			
G2	How effective do you think social distancing measures are (e.g., through a general lockdown) for slowing down the spread of the coronavirus?	1. Not at all effective 2. Slightly effective 3. Neither effective nor ineffective 4. Somewhat effective 5. Very effective 98. Don't know/prefer not to answer	
G3	What measures have been implemented in your village? [Please select multiple]	1. Schools are closed 2. Non-essential businesses and shops closed 3. Instructed not to leave home 4. Transport services shut 5. Government offices are closed 6. Temples/religious areas closed 97. Other, please specify. 98. Don't know/prefer not to answer	Add additional options depending on context.

Section H

Read: We have a few final questions regarding your overall thoughts.			
H1	Would you be interested in receiving digital updates about the coronavirus (for example, a weekly pushcall) in addition to the information sources you already have?	1. Yes → H2 2. No → H3 3. Don't know/prefer not to answer → H3	
H2	What types of information do you think would be useful for you to receive. PAD will coordinate with our	1. Public health advice, including prevention and symptoms 2. Updates about government policies and measures, e.g. lockdown	Add additional options depending on context.

	(government) partners and make every effort to provide you the information you request, but we cannot promise at this point whether and when we will add the content on coronavirus Note for surveyor: Select all that apply. Do not read the answer choices and do not prompt the respondent.	3. News-style updates about number of cases, number of recovered, etc. in the country. 4. Agricultural/market related advisory 5. No preference 97. Other, please specify → H2.1	
H2A	If other, please specify.	[text]	
H3	Do you have any other concerns or thoughts on this situation that you would like to share?	1. Yes → H4 2. No → H5	
H4	What are the concerns or thoughts you would like to share?	[text]	
Read: We would now like to ask you two short questions about your health.			
H5	In the last two weeks, have you experienced fever?	1. Yes 2. No 98. Don't know/prefer not to answer	
H6	In the last two weeks, have you experienced an unusual dry cough and/or difficulty breathing/shortness of breath?	1. Yes 2. No 98. Don't know/prefer not to answer	
Read: We have now completed the survey. Thank you for your time.			

Section Z: Survey Status

For Surveyor:			
Z1	Was survey completed?	1. Yes 2. No	
Z2	Should the respondent be called back?	1. Yes 2. No	
Z3	Reason for incomplete survey	1. Confidentiality concerns	

		2. No time 3. Respondent did not understand survey 4. Respondent too young or did not share age 5. Refused to confirm identity 6. Wrong respondent/ wrong number 7. Bad signal/could not hear respondent 97. Other (specify) _____	
Z3.1	Please specify	[text]	
Z4	Are there any other further notes that you want to add to this survey? If no, leave blank.	[text]	

PAD COVID-19 SURVEY

Instructions to surveyors:
Unless otherwise indicated, read the complete question as it is written and wait for the respondent to answer. If they are not understanding the question or unsure of how to respond, try to rephrase the question (while keeping the original meaning). If they are still unsure or are clearly misunderstanding, provide an example of the response (a few options in a list or scale).

AGRO DEALER SURVEY

Section 0: Pre-survey administration

N	Question	Answer	Adapting notes
01	Mobile number [prefilled]		
02	Respondent name [prefilled]		
03	Programme		
04	Surveyor name		
05	Date of survey		
06	Interview start time		
07	Interview end time		
08	Surveyor, does the prefill information match the checklist?	1. Yes 2. No -> Check that you entered respondent's [name/id/number] correctly	
09	What is the phone call status?	1. Call answered -> Section A. Informed Consent 2. Phone off 3. Not answering 4. Busy 5. Wrong number 6. No longer in	

		service 7. Out of service	

Section A: Informed Consent

Question Number	Question	Answer	Adapting notes
A1	Read: Hello, my name is [surveyor name] and I am calling from the MoA Info service, provided by the Kenya government and Precision Agriculture for Development . Am I speaking to [name in 02]? Note for surveyor: If the person you are speaking to is not [name in 02], please request to talk to [name in 02].	1. Yes → A2 2. No → A5 3. Name does not match database. -> A5 98. Don't know/prefer not to answer → A5	Adapt name of service and providing partners based on local context.
A2	Read: We are conducting a survey about the novel coronavirus and its impact on farmers. We would like to ask you some questions about the virus and your perceptions and response. The survey should take 20 minutes to complete and the information you provide will remain confidential and never connected to you. Your responses will be stored safely and only accessed by a few researchers. Your participation may not benefit you directly, but may benefit others as your responses may inform the response to COVID-19. Your participation is completely voluntary, and there are no penalties for refusing to participate or stopping participation. If you have questions, you can ask them at any time. Please feel free to contact our customer care with any queries or concerns at 0798 739 889. Do you have any questions now?	1. Yes 2. No	Adapt name of service and providing partners based on local context.
A2.1	Do you understand everything I have explained?	1. Yes 2. No → A5	
A3	How old are you? *SURVEYOR NOTE:* If the respondent is younger than 18 years' old, thank them for their time,	[Integer]	

	explain that you cannot survey youths and end the survey. If the respondent is older than 18 years' old, continue the survey. If respondent refuses to share their age, explain that you cannot continue without this. If they still refuse, enter '-98', thank them for their time and move to A5.		
A4	Do you agree to participate in this survey today?	1. Yes -> Next section 2. No-> A5	
A5	Reason for incomplete survey	1. Confidentiality concerns 2. No time 3. Respondent did not understand survey 4. Respondent too young or did not share age 5. Refused to confirm identity 6. Wrong respondent 7. Respondent did not pick up after 3 attempts 8. Bad signal/could not hear respondent 9. Phone unreachable 97. Other (specify) _____	

Section B: Demographics

Read: We will begin by asking you a few questions about yourself and your household. Please feel free to say "don't know" or "prefer not to answer" if you are not comfortable sharing.

N	Question	Answer	Adapting notes
B1	County		Select country specific and relevant location variables if unavailable in profiling data.
B2	Constituency		
B3	Ward		
B4	Village		
B5	Gender	1. Male	

		2. Female 98. Don't know/prefer not to answer	
B6	Do you own any vehicle? [Select all that apply]	1. Four-wheel vehicle 2. Motorcycle 3. Non-motorized vehicle 4. No 5. Don't know/ prefer not to say	
B7	What percentage of your income is generated by your shop?	1. < 25% 2. 25-50% 3. 50-75% 4. >75% 98. Don't know/prefer not to answer	

Commented [KT1]: Moved to after section D

Commented [KT2]: Moved to after section D

SECTION C: LOCATION AND TIMINGS

	Question	Answer choices
Note	We will begin by asking you a few questions about the location and timings of your shop.	
C1	How many paid employees did your business have at the end of February 2020? (both full-time and part-time, including family members but excluding yourself)	[__|__|__] workers
C2	What were your total annual sales/revenue in 2019?	Currency [ ]
C3	In what kind of area is your shop located?	1. Inside the village 2. Outskirts of the village 3. In the main market in town 4. In the main market in the city 97. Other, Specify
C4	Was your shop open during the last 7 days?	1. Yes, it's always open 2. Yes, it's open everyday but for fewer hours 3. Yes, it's open but not every day 4. I only open the shop on case to case to case basis→skip C6 and C8 5. No, it's always closed
C5	At what time do you open your shop normally?	1. Before 6 a.m. 2. 6 a.m. to 8 a.m. 3. 8 a.m. to 10 a.m. 4. 10 a.m. to 12 noon

		5. 12 noon to 2 p.m. 6. 2 p.m. to 4 p.m. 7. 4 p.m. to 6 p.m. 8. 6 p.m. to 8 p.m. 9. After 8 p.m.
C6	At what time have you been opening your shop during the last 7 days?	1. Before 6 a.m. 2. 6 a.m. to 8 a.m. 3. 8 a.m. to 10 a.m. 4. 10 a.m. to 12 noon 5. 12 noon to 2 p.m. 6. 2 p.m. to 4 p.m. 7. 4 p.m. to 6 p.m. 8. 6 p.m. to 8 p.m. 9. After 8 p.m.
C7	At what time do you close your shop normally?	1. Before 6 a.m. 2. 6 a.m. to 8 a.m. 3. 8 a.m. to 10 a.m. 4. 10 a.m. to 12 noon 5. 12 noon to 2 p.m. 6. 2 p.m. to 4 p.m. 7. 4 p.m. to 6 p.m. 8. 6 p.m. to 8 p.m. 9. After 8 p.m.
C8	At what time have you been closing your shop during the last 7 days?	1. Before 6 a.m. 2. 6 a.m. to 8 a.m. 3. 8 a.m. to 10 a.m. 4. 10 a.m. to 12 noon 5. 12 noon to 2 p.m. 6. 2 p.m. to 4 p.m. 7. 4 p.m. to 6 p.m. 8. 6 p.m. to 8 p.m. 9. After 8 p.m.
C9	How many days a week do you usually open your shop?	[Integer]
C10	How many times in the last 7 days was your shop open?	[Integer]
C11	Why is your shop always/partially closed? *Note: Ask if C4= 2 or 3*	1. The government ordered to shut down 2. Practicing social distancing/lockdown 3. No buyer 4. No stock 5. Church 97. Other, specify. 98. Don't know/doesn't want to respond

SECTION D: INVENTORY

	Question	**Answer choices**

Note	Do you have any inventory of the following products	
D1	Fertilizer: DAP	1. Yes 2. No
D2	Fertilizer: Potash	1. Yes 2. No
D3	Fertilizer: Urea	1. Yes 2. No
D4	General pesticides	1. Yes 2. No
D5	Bio-pesticides	1. Yes 2. No
D6	Fungicides	1. Yes 2. No
D7	Seeds	1. Yes 2. No
D8	Plant growth regulators	1. Yes 2. No
Note	Do you expect the inventory of the following products to last a month? [Note to surveyor: ask if D1-8 = Yes]	
D9	Fertilizer: DAP	1. Yes 2. No
D10	General pesticides	1. Yes 2. No
D11	Seeds	1. Yes 2. No
Note	Do you expect to be able to restock the inventory next month? [Note to surveyor: ask if D1-8 = No]	
D12	Fertilizer: DAP	1. Yes 2. No
D13	General pesticides	1. Yes 2. No
D14	Seeds	1. Yes 2. No
Note	Have you noticed any change in the last two months of the average price of these inputs?	
D15	Fertilizer: DAP	1. Much lower, lowest price in the last 5 years. 2. Lower 3. About the same 4. Higher 5. Much higher, highest price in the last 5 years 96. Not applicable 98. Don't know/prefer not to answer
D16	General pesticides	1. Much lower, lowest price in the last 5 years. 2. Lower 3. About the same 4. Higher 5. Much higher, highest price in the last 5 years

		96. Not applicable 98. Don't know/prefer not to answer
D17	Seeds	1. Much lower, lowest price in the last 5 years. 2. Lower 3. About the same 4. Higher 5. Much higher, highest price in the last 5 years 96. Not applicable 98. Don't know/prefer not to answer

SECTION E: SUPPLY CHAIN

	Question	Answer choices
E1	Where do you typically purchase your inputs from? [Select all that apply]	1. Directly from manufacturer 2. Appointed distributor dealer 3. Wholesale agro-dealer 4. Retail agro-dealer 97. Other, please specify
E2	Do you communicate with your supplier via mobile phone?	1.Yes 2. No
E3	Have you needed to restock your inventory of inputs in the last 4 weeks?	1. Yes 2. No-> E6
E4	Have you purchased inputs to restock your shop in the last 4 weeks?	1. Yes 2. No-> E6
E5	Where did you purchase your inputs from? [Select all that apply]	1. Directly from manufacturer 2. Appointed distributor dealer 3. Wholesale agro-dealer 4. Retail agro-dealer 97. Other, please specify
E6	How did you receive your inputs?	1.Delivered by supplier 2. Collected by myself 97. Other, please specify
E7	Relative to the same season last year, how do prices by your supplier compare?	1. Much lower, lowest price in the last 5 years. 2. Lower 3. About the same 4. Higher 5. Much higher, highest price in the last 5 years 96. Not applicable 98. Don't know/prefer not to answer
E8	Relative to the same season last year, how do prices you charge to farmers compare?	1. Prices have increased 2. Prices have decreased 3. Prices have not changed 97. Other, please specify 98. Don't know/doesn't want to respond
E9	Has the availability of inputs from wholesalers	1. Inputs are available as usual

	changed in the last two months?	2. Inputs are not available easily: only certain *brands* are available 3. Inputs are not available easily: only certain *products* are available 4. Transportation is not available 97. Other, specify. 98. Don't know/doesn't want to respond
E10	Why were you not able to purchase inputs? *Note: Ask only if E4 = 2*	1. No transportation 2. The high cost of transportation 3. Inputs not available 4. Price of inputs is very high 5. There is no demand in the market 6. Only substandard product is available 97. Others, specify. 98. Don't know/doesn't want to respond
E11	Do you think that you'll be able to cover farmers' demand for inputs for the first rainy season of 2020?	1. Yes → Section F 2. No
E12	Why do you think you won't be able to meet the demand for the first rainy season of 2020?	[text]

SECTION F: FARMER INTERACTIONS

	Question	Answer choices
F1	How many customers did you sell inputs to in the last 7 days?	[Integer]
F2	Compared to the same month last year, how has the footfall to your shop been during the last 1 month?	1. Very high footfall 2. High footfall 3. Similar footfall as before 4. Low footfall 5. Very low footfall
F3	Why do you think the footfall has increased? *Note: Ask if F2=1 or 2*	1. Farmer wants to enquire about availability 2. Farmer wants to enquire about prices 3. Farmer wants to stock inputs 97. Others, specify. 98. Don't know/doesn't want to respond
F4	Why do you think the footfall has decreased? *Note: Ask if F2=4 or 5*	1. Everyone is practising social distancing 2. Authorities are not allowing anyone to come outside 3. Farmers are unable to find transport to reach the shop 4. Farmers do not have resources to buy inputs 5. Farmers think the shops are closed 6. The shop is generally closed 7. Off Season 97. Others, specify. 98. Don't know/doesn't want to respond

F5	How much footfall do you expect to see next week?	1. Very high 2. High 3. Normal 4. Low 5. Very low
F6	Have you noticed any changes in your sales in the last 7 days?	1. Very high sale 2. High sale 3. A similar amount of sale 4. Low sale 5. Very low sale
F7	Why do you think your sales have decreased? *Note: Ask if F3 = 4 or 5*	1. Low availability of inputs 2. The higher cost of inputs 3. Social distancing 97. Others, specify 98. Don't know/doesn't want to respond
F8	How do you think your sales are going to be next week?	1. Very high 2. High 3. Neither high nor low 4. Low 5. Very low
F9	How often do you typically receive calls/messages from farmers asking about inputs?	1. More than once a day 2. Once a day 3. Multiple times a week 4. Once a week 5. Less than once a week

SECTION G: COVID-19 BEHAVIOR

	Question	Answer choices
G1	Have you done anything differently in purchasing stocks for your shop under the current situation?	1. Yes→follow-up [text] 2. No
G2	Are you doing anything differently in selling inputs to farmers under the current situation?	1. Yes→follow-up [text] 2. No
G3	Are you doing anything else differently in operation your agroshop under the COVID-19 outbreak?	1. Yes→follow-up [text] 2. No
G4	What are the biggest challenges under the COVID-19 outbreak in operating your agroshop? [Do not read answer choices]	1. Lack of inventory 2. Lack of business 3. Social distancing regulations 4. Not enough customers 5. Customers can't pay in cash (or increased sales on credit) 6. Limited store hours 7. Not being able to find supplies or access suppliers

		8. Not enough credit 9. Being exposed to health risks 10. No challenge 97. Other, please specify
G4A	Please specify	[text]
G5	What concerns you most about the coronavirus?	1. I'm not concerned about the coronavirus 2. Contracting the disease myself 3. A member of my family contracting the disease 4. Not being able get inputs for my farm 5. Not being able to sell my crops 6. Not having enough work/wage income 7. Not having enough food for the household 8. Not being able send my children to school 97. Other, specify 98. Don't know/prefer not to answer

SECTION Z: SURVEY STATUS

	Question	Answer choices
End	We have now completed the survey. Thank you for your time	
Z1	Was the survey completed?	1. Yes 2. No
Z2	Should the respondent be called back?	1. Yes 2. No
Z3	Are there any other further notes that you want to add to this survey? [If no, leave blank]	[text]

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