TomorrowNow:

Lean Evaluation Study

Kenya

Credit: Tech Crunch

Welcome To Your 60dB Results

Contents

Headlines

03 / Introduction
04 / Methodology
07 / Snapshot
08 / Top Insights

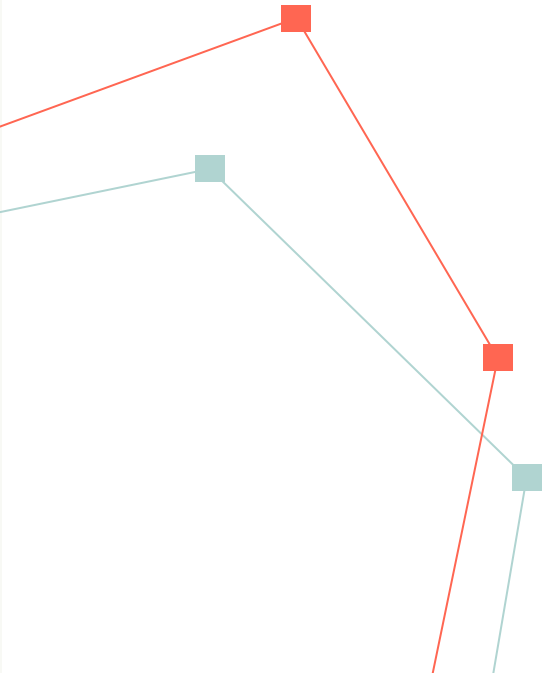
Results

10 / Balance Test
11 / Farmer Profile
18 / Primary Outcomes
26 / Experience with Advisory

Appendix

39 / Regression Results
41 / Detailed of Benchmarking Comparison
42 / Summary of Data Collection

Introduction



About the Study

The Busara Center for Behavioral Economics and 60 Decibels received a grant from the Bill & Melinda Gates Foundation to develop a lean, replicable, yet robust methodology for evaluating the impact of digital farmer services (DFS.) We piloted our lean evaluation approach with TomorrowNow's hyper-local SMS advisory for maize farmers in Kenya.

In May and June 2023, we conducted interviews with maize farmers to measure their adoption of farming practices recommended by the SMS advisory.

About TomorrowNow

TomorrowNow.org's technology and weather API generates accurate hyper-local weather data for developers and businesses. In Kenya, TomorrowNow.org has partnered with the Kenya Agriculture and Livestock Research Organization (KALRO) to share climate-smart agriculture information and advisory via SMS to farmers, free of cost. A farmer can receive one of two types of messages:

- **Version 1 (V1):** KALRO's value-chain specific general farming advisory (**Comparison**)
- **Version 2 (V2):** KALRO's value-chain specific general farming advisory enhanced with TomorrowNow's hyper-local weather advisory (**Treatment**)

About this Report

The report aims to:

- Explore the differences in practices based on the type of advisory received, including the use of certified seeds, NPK fertilizer, and soil water management.
- Examine differences in outcomes such as successful germination and crop loss.
- Provide early feedback to KALRO and TomorrowNow on user experience.

Methodology (1/3)

Survey mode	Phone
Country	Kenya
Language	Swahili
Dates of data collection	May-June 2023
Response rate (Treatment)	53%
Response rate (Comparison)	62%
Confidence level	95%

Methodology

For the lean evaluation, we will conduct two rounds of data collection:

1. **Post-Planting Study:** The survey was conducted in May - June 2023, after maize planting ended. We interviewed 605 treatment farmers and 401 comparison farmers to understand their demographic and agricultural profiles, as well as the difference in adoption of maize planting practices after receiving TomorrowNow's V2 advisory compared to KALRO's V1 advisory.
2. **Post-Harvest Study:** This survey will be conducted in October 2023, after the harvest season. It will allow us to compare the harvest outcomes experienced after receiving TomorrowNow's V2 advisory against KALRO's standard V1 advisory. We will interview the same treatment and comparison farmers as attrition rates permit.

To estimate the difference in outcomes between farmers receiving V1 and V2 messages, we rely on a **cross-sectional methodology**. We control for observable factors such as location, land size, age, and education. Using a regression model based on the collected outcomes of interest, we estimate the difference between the two groups.

In addition, we employ a concurrent triangulation mixed methods design, combining both quantitative and qualitative data at the customer-level. This approach ensures a comprehensive evaluation of TomorrowNow and KALRO services and facilitates the answering of key research questions using the same customer-level data.

Methodology (2/3)

We spoke to 1006 farmers, of whom 605 are receive KALRO messages enhanced with TomorrowNow's technology (V2) and 401 receive KALRO's standard messages (V1).

Logistic Regression

To analyse the impact of V2 (Treatment) of the model compared to V1 (Comparison), we are using a logit regression, which is a tool for studying the relationship between binary outcomes and multiple predictor variables at a specific point in time.

The outcomes of interest are:

- Use of certified seeds
- Use of NPK fertilizer
- Awareness of soil cover techniques
- Pest infestations
- Successful germination
- Crop loss

In the regression analysis, we control for various observable characteristics such as gender, age, education, land size, location (county), income source, and others. This helps to minimize potential bias arising from unobserved omitted variables and enhances the reliability and validity of the estimates. We focus on a 95% (p-value less than 0.05) confidence level or higher to determine statistical significance.

Sampling

Our sample consists of two groups of farmers:

- **Treatment:** Maize farmers registered with KALRO to receive advisory messages and are selected to receive the KALRO messages that incorporate TomorrowNow's technology (V2).
- **Comparison:** Maize farmers registered with KALRO to receive advisory messages and receive KALRO's standard messages (V1).

Methodology (3/3)

"KALRO has been a significant help to me this year. Unlike last year when I didn't have their assistance, I didn't have a successful harvest. However, with their guidance and support this year, I have managed to harvest a significant portion of my maize plantation. The only setback I currently face is the lack of funds to purchase necessary inputs for my farm.." - Female, 44, Treatment

"KALRO's messages guided me on land preparation, and planting timing, and even helped me with pest control by recommending appropriate pesticides and medications. Their support was immensely helpful to me." - Female, 52, Treatment

Limitations of the analysis

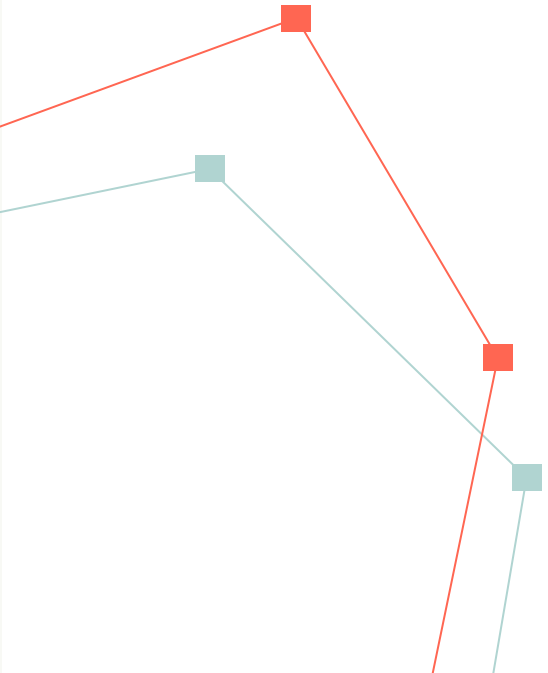
1. **Linearity assumption:** In logit regression, the linearity assumption assumes a linear relationship between the control variables and the log-odds of the binary outcome. If this assumption is violated, and there is a non-linear relationship, the model may not accurately capture the true underlying associations.
2. **Cross-sectional data:** Cross-sectional analyses have limitations in establishing causality since the data is captured at a single time point. While they can provide associations between variables at a specific moment, they cannot determine cause-and-effect relationships.
3. **Variation in desired outcomes:** TomorrowNow tailors its recommendations to individual farmers based on their geolocation and unique requirements. We did not have the specific recommendations given to each farmer, so we were unable to determine if they adopted the recommended practice. Our regression analyses are therefore restricted to practices that were recommended to all farmers.

Key Research Questions

Here are the key learning questions for this round of the study:

1. How does the adoption of maize planting practices differ between farmers receiving V2 messages and farmers receiving V1 messages?
2. Are farmers receiving V2 messages more likely to read the messages than those receiving V1 messages?
3. Do farmers' perceptions of the SMS service differ between farmers receiving V2 messages and farmers receiving V1 messages?
4. What is the impact of more accurate and relevant SMS-based advice on farmers level of trust in digital advisory? Does this differ between farmers receiving V2 messages and farmers receiving V1 messages?

TomorrowNow Snapshot



Who Are The Farmers?

Treatment	Comparison	
53%	50%	Are female
75%	57%	Completed secondary schooling or higher
43%	37%	Have access to a smartphone
45%	35%	Mainly earn income from non-farm source
31%	29%	Sold ‘all’ or ‘almost all’ of farm produce

Outcomes of Interest

Treatment	Comparison	
72%	52%	Report season was “much better” because of the advisory
78%	60%	Experienced successful germination of all seeds
60%	46%	Avoided crop damage due to weather
43%	30%	Experienced no pest infestation in their crops
3%	2%	Are unaware of techniques for water drainage channels
13%	34%	Are unaware of soil cover techniques

Customer Voices

Opinions On [Company] Value Proposition
59% were Promoters and were highly likely to recommend

“The information provided by KALRO has consistently been accurate, and it has greatly benefited my maize farm. Their guidance helps me predict the ideal timing for soil preparation and maize sowing, and I find their predictions to be highly reliable.” - Female, 45, Treatment

“Using SMs has helped to reach out to many farmers faster and in a precise way which prevents wasted time on attending seminars or farmer meetings.” - Male, 26, Treatment

“It's been very accurate, helpful for me and it serves me well. Despite my literacy limits, I'm able to farm with ease and easily get information on farming and weather changes.” -Female, 43, Treatment

Opportunities For Improvement
15% had a specific suggestion for improvement

“KALRO should offer some support to help farmers acquire some of the farm inputs such as seeds and fertilizer, because most of the inputs are unaffordable due to high prices.” - Male, 48, Treatment

“They should structure the messages they send out in a language that is most easily understood, even by unlearned or old people. - Male, 23, Treatment

Top Insights

1 Farmers receiving TomorrowNow's enhanced advisory from KALRO are more likely to report successful germination and less likely to report any crop infestation or damage to their maize.

Treatment farmers were more likely to achieve successful germination of all their seeds and to report 'no crop damage' due to weather when compared to comparison farmers. Additionally, treatment farmers were less likely to report that their maize crops were infested with pests during the season. This suggests that messages enhanced with hyper-local weather data may be more effective in promoting practices that enable germination and prevent pest infestation, such as planting at the right time and managing soil moisture.

2 Farmers who receive messages enhanced with TomorrowNow's weather data are more likely to say that their agricultural season was 'much better' because of the SMS advisory.

72% of treatment farmers say the season was 'much better' because of the SMS advisory, compared to 52% of comparison farmers. More treatment farmers rated TomorrowNow-enhanced messages favourably on timeliness, trustworthiness, and relevance of the advisory.

Among treatment farmers, 68% reported that accessing information became "much easier" after engaging with KALRO, while only 52% of comparison farmers experienced a similar improvement. Treatment farmers were also more likely to be 'very disappointed' if they could no longer receive the messages.

3 Farmers in the two groups are equally likely to use NPK fertilizer and certified seeds.

We found no significant relationship between receiving TomorrowNow's enhanced advisory and the use of certified seeds or NPK fertilizer during the growing period. Many farmers reported challenges in accessing inputs, which may explain the lack of effect. However, treatment farmers did demonstrate greater knowledge of soil cover techniques than those in the comparison group.

4 Both treatment and comparison farmers are reporting similar levels of satisfaction with the SMS advisory. However, comparison farmers are slightly more likely to report encountering challenges related to the advisory itself.

Treatment farmers' satisfaction is only slightly higher than comparison farmers (Net Promoter Score of 44 vs. 42). Both groups find the advisory engaging, empowering and say that it helps to facilitate informed decision-making. Treatment farmers encounter fewer challenges (9%) compared to comparison farmers (12%), with understanding the advisory being the main challenge.

“Their advisories offer me clarity and they bring ease into farming. They explain well and empower me to be a confident farmer. Their weather updates are reliable and precise especially in these unpredictable climate change times we're in. I'm very grateful and guided by them and they should keep it up.”

- Male, 60, Treatment

Balance Test

The treatment and comparison groups are similar, with higher levels of education, more smartphone use, and less reliance on farm income in the treatment group.

We conducted equivalence tests to assess whether there are any systematic differences between the treatment and comparison groups. This is critical because the treatment allocation, in this case, the selection of who receives V2 messages, is not random. The balance tests will assist us in evaluating the degree of similarity between the treatment and comparison groups, ensuring that they are comparable for the analysis.

In our regression analysis, we control for observable differences.

Blue box: Statistically significantly difference at 95% confidence

Balance Test

The degree to which treatment farmers' and comparison farmers' experiences are similar.

n =	Treatment 605	Comparison 401
Gender % female	53%	50%
Gender of head of household % female	12%	11%
Age in years	43	46
Education % completed secondary education	75%	57%
Household size average size	5.1	5.4

n =	Treatment 605	Comparison 401
Source of income % with non-farm income as main source	45%	35%
Land used for farming in acre	1.9	2.4
Land under maize In acre	1.4	1.5
Smartphones % smartphone users	43%	37%

Farmer Profile

This section highlights the demographics and farm characteristics of farmers in both the treatment and comparison groups.

The key indicators in this section are:

- **Demographics:** What is the typical farmer like in terms of gender, age, region, household size, gender of household head, education level, and income source?
- **Land:** How much land do they cultivate in general and for maize?
- **Farm Profile:** Do they mostly sell or consume their crops?
- **Digital Access:** What type of mobile phones do they have, and what do they use them for?
- **Advisory Access**: Did farmers receive advisory related to maize crops this season or in previous seasons? How often did they receive the advisory and how much do they read them?

About The Farmer

We spoke to a mix of male and female farmers in Baringo, Bomet, and Nyeri counties.

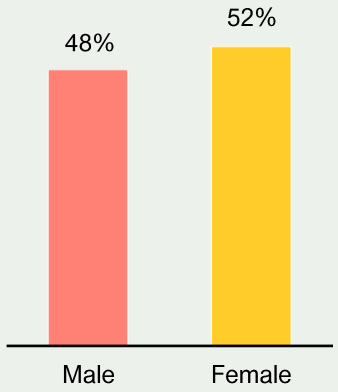
We asked questions to understand the farmers' demographics.

Most farmers we spoke to are female with an average household size of 6. Majority of farmers (88%) said the head of their household is male.

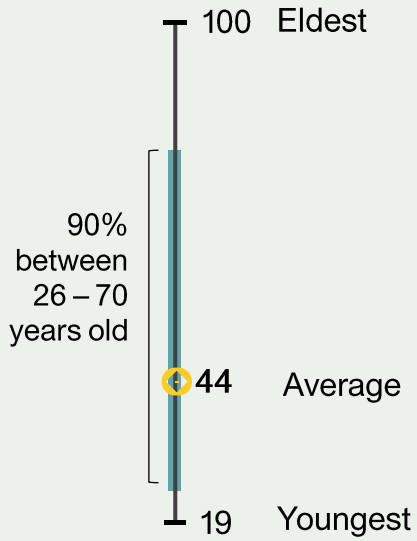
About The Farmers We Spoke With

Data relating to farmer characteristics (n = 1006 | Treatment = 605; Comparison = 401)

Gender



Age



County

	Treatment	Comparison
Baringo	18%	42%
Bomet	38%	26%
Nyeri	44%	32%

Household Size

6 Average size

About The Farmer

Nearly 7 in 10 farmers have a secondary school education or higher and more than half rely on farm income as their primary household income source.

We also asked about the farmers' education and household income sources.

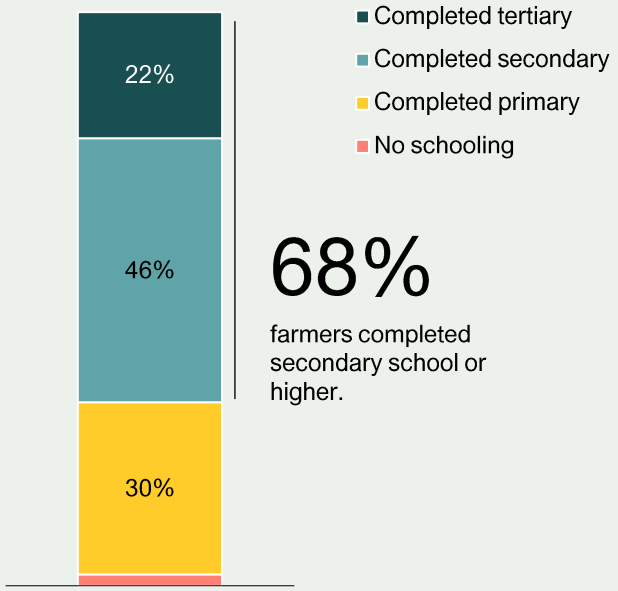
22% of farmers hold a university or post-graduate degree.

Treatment farmers have a higher completion rate of secondary education or higher (75%) compared to comparison farmers (57%).

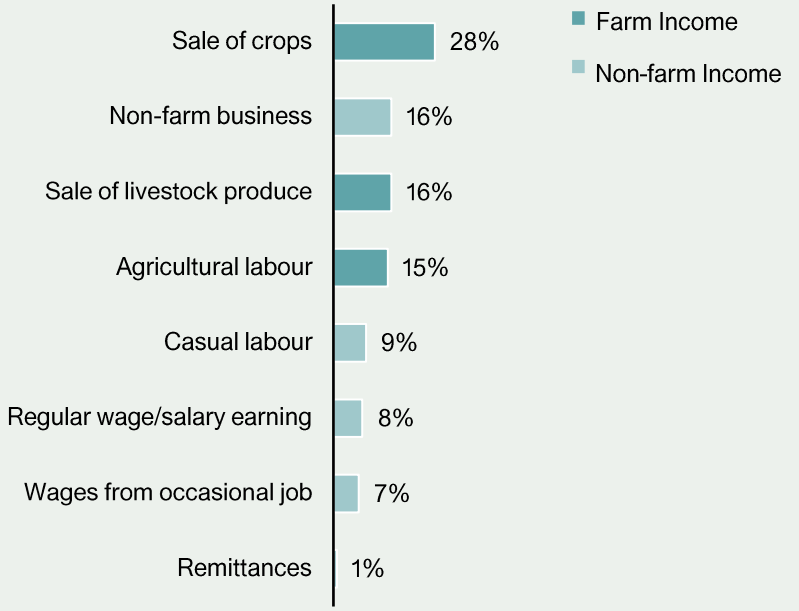
About The Farmers We Spoke With

Data relating to farmer characteristics (n = 999 | Treatment = 602; Comparison = 397)

Household Education Level



Main Source of Household Income



About Their Farming

More than 2 in 3 farmers consume 'all' or 'most' of their farm produce, and this pattern is consistent across both the treatment and comparison groups.

We wanted to understand the farmer's agricultural and livelihood activities in the last 12 months.

Treatment farmers cultivated an average of 1.9 acres, while comparison farmers cultivated 2.4 acres. There were similar trends in the consumption or sale of farm produce, as farmers in both groups predominantly consumed 'all' or 'most' of their produce.

Female farmers are more likely to report consuming all or almost all their farm produce (48%) compared to male farmers (38%).

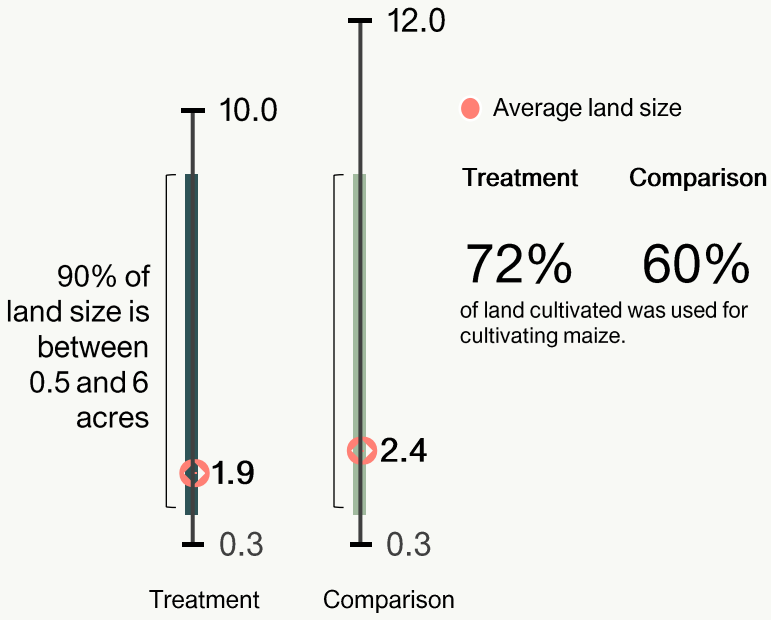
Nyeri farmers also report higher consumption of all or almost all farm produce (55%) compared to Baringo (37%) and Bomet (34%).

*Data was winsorized at 1%. Extreme values were replaced with the corresponding 5th and 99th percentiles, reducing the impact of outliers while preserving the overall distribution.

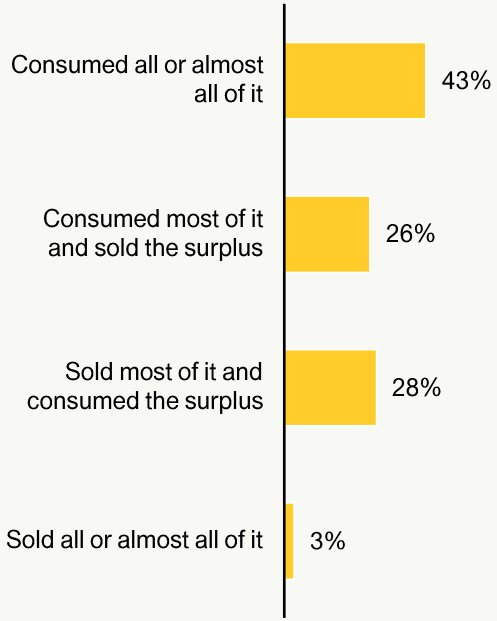
About The Farmers We Spoke With

Data relating to farm characteristics (n = 1006 | Treatment = 605; Comparison = 401)

Size of Land Cultivated*



Use of Farm Produce for Consumption and Sale



Digital Access

Most farmers use feature phones. Almost all farmers actively use their mobile phones for making calls and sending or receiving SMS messages.

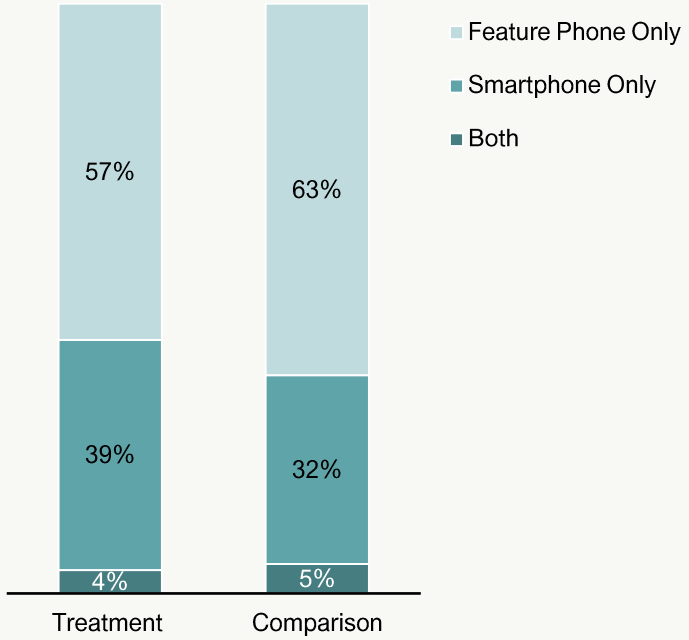
To gauge the digital access of farmers, we asked about the type of mobile phones they used in the last 12 months and for which activities they used the phone.

Comparison farmers (37%) are slightly less likely to use a smartphone compared to treatment farmers (43%). In addition, female farmers are more likely to use a feature phone exclusively (66%) compared to treatment farmers (52%).

There is a correlation between education level and phone use, as farmers who use feature phones are more likely to have only primary schooling (43%) compared to farmers who use smartphones (16%).

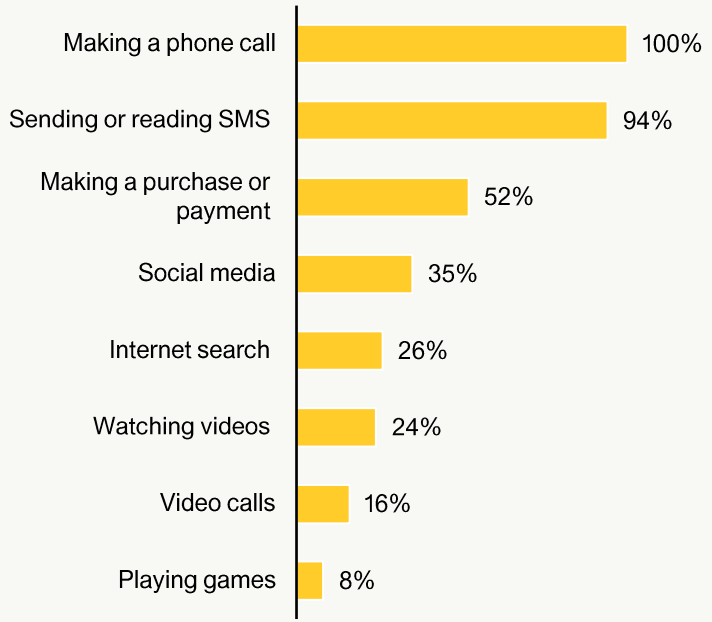
Type of Phone

Q: Which kind of phone—yours or someone else's—have you used in the last 12 months? (n = 1006 | Treatment = 605; Comparison = 401)



Phone Activities

Q: In the last 30 days, have you used a mobile phone (either yours or someone else's) for any of the following? (n = 1006) Multi-select question.



Awareness of KALRO SMS Advisory

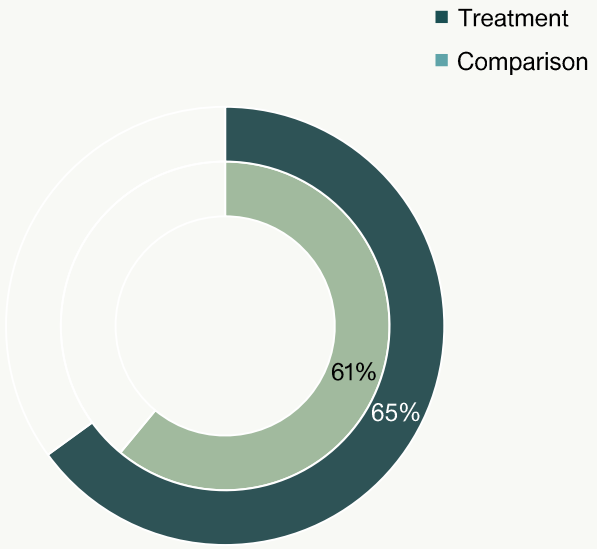
1 in 3 farmers in both the treatment and comparison group do not report receiving messages from KALRO.

Despite the knowledge that all farmers in both the treatment and comparison groups are receiving SMS advisory messages from KALRO, only 65% of treatment farmers and 61% of comparison farmers report actually receiving these messages.

The lower reported reception of SMS advisory messages among farmers could be due to several factors, including potential connectivity issues that hinder messages from reaching farmers, or the possibility that farmers are not receiving or noticing the messages, leading to a lack of awareness altogether.

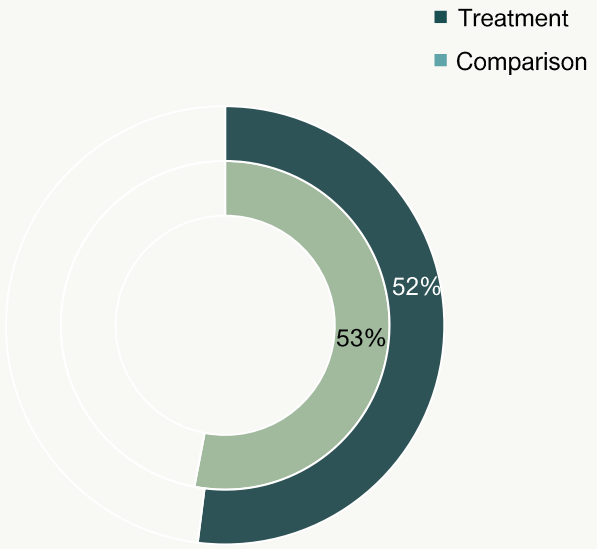
Advisory Received this Season

Q: Did you receive SMS information and advisory related to your maize crop from KALRO this Masika season (i.e. in the last 4 months)? (n = 998 | Treatment = 602; Comparison = 396)



Advisory Received in Past Seasons

Q: Have you received SMS information and advisory related to your maize crop from KALRO in previous seasons? (n = 994 | Treatment = 602; Comparison = 392)



Engagement with SMS Advisory

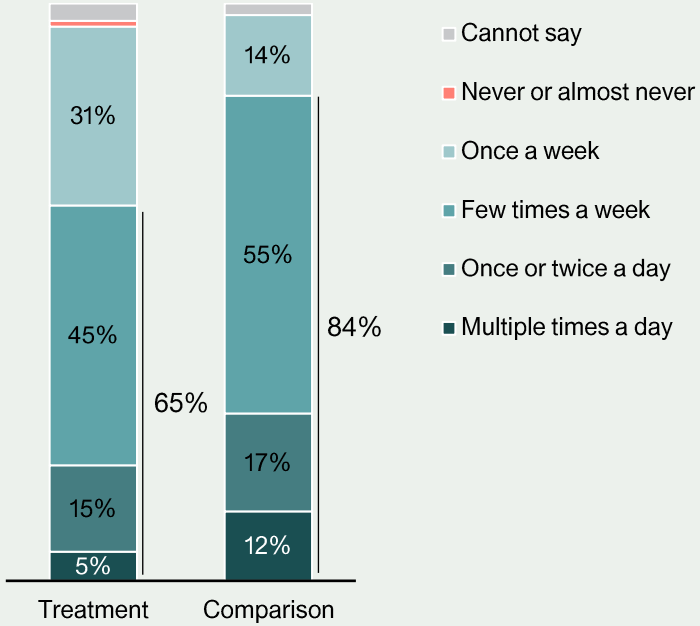
Most farmers that who receive KALRO advisory messages report receiving it multiple times a week, with more than half reading ‘all of it’ in full.

The proportion of farmers who report receiving messages at least multiple times a week is significantly higher for the comparison group (84%) compared to the treatment group (65%).

The readership of KALRO advisory is consistent across both groups, but it is affected by educational differences. Farmers with lower education levels are less likely to read the advisory, either in part or in full.

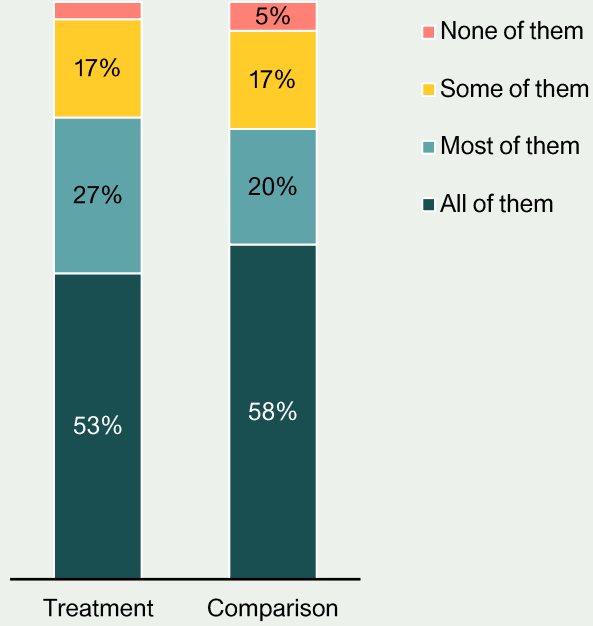
Frequency of Advisory Received

Q: How often did you receive SMS advisory from KALRO this Masika season? (n = 635 | Treatment = 394; Comparison = 241)



Amount of Advisory Read in Full

Q: Approximately how many of the advisory SMSs you received from KALRO this Masika season did you read in full? Did you read: (n = 632 | Treatment = 393; Comparison = 239)



Primary Outcomes

In this section, we examine the key practices and outcomes reported by farmers during the post-planting season, and we compare them between the treatment and comparison groups. Where appropriate, we present the results of our regression analysis.

The key indicators in this section are:

- **Farming Decisions, Plantation Factors & Types of Seeds Used:** How did the farmers decide when to plant and what type of seeds they used?
- **Soil and Water Management:** Did farmers create water channels and use plant material as soil cover?
- **Use of Fertilizers:** What kind and how much fertilizer did they use?
- **Crop Inspection for Pests:** Were crops inspected for insects and diseases, and were they infested with pests?
- **Seed Germination and Crop Damage:** Did seeds germinate and were crops damaged due to weather?
- **Farming Decisions based on Advisory:** What are the farming decisions farmers make based on the advisory they received?

Planting Timing

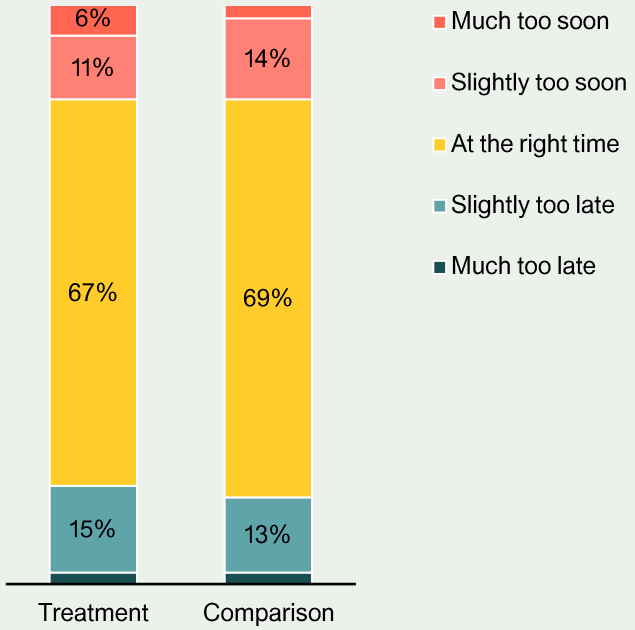
Two-thirds of farmers report that they planted at the right time. Farmers most commonly rely on their own experience and observed weather to decide when to plant.

One-third of farmers report that they had either planted their crops too early or too late. The main reasons cited by the farmers for planting incorrectly were financial constraints, which forced them to plant at unfavourable times, and unpredictable weather conditions.

Of the farmers who reported receiving SMS advisory from KALRO in the last 4 months, less than half (47%) used SMS weather and advisory messages to make decisions about when to plant during this Masika season.

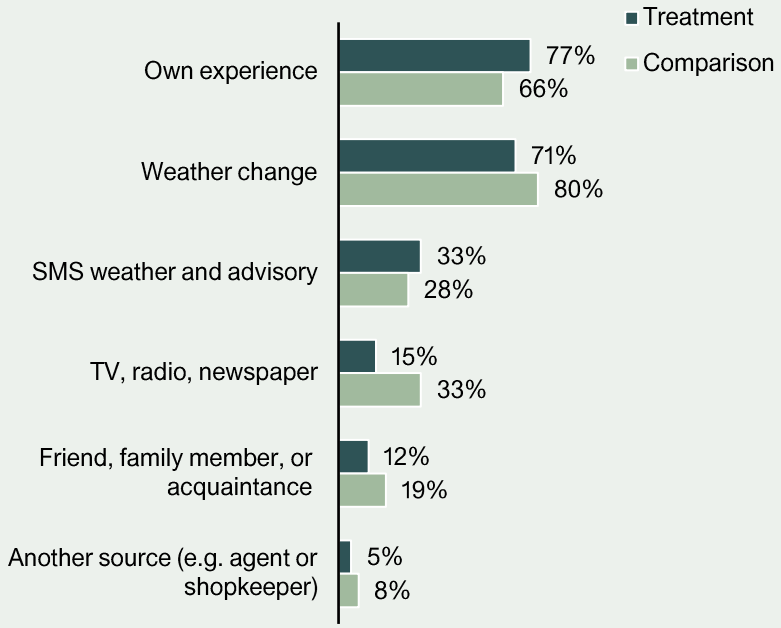
Perception of Farmers' Planting Time

Q: Based on what you have observed about the growing season, do you think that you planted: (n = 1006 | Treatment = 605; Comparison = 401)



Factors Determining Planting Time

Q: What did you use to decide when to plant your maize this Masika season? (n = 1006 | Treatment = 605; Comparison = 401) Multi-select question.



Type of Seeds

Hybrid maize seeds are the most popular among farmers in both groups. We detected no difference in adoption of certified seeds between the two groups.

Comparison farmers are more likely to have planted hybrid seeds (79%) compared to treatment farmers (62%).

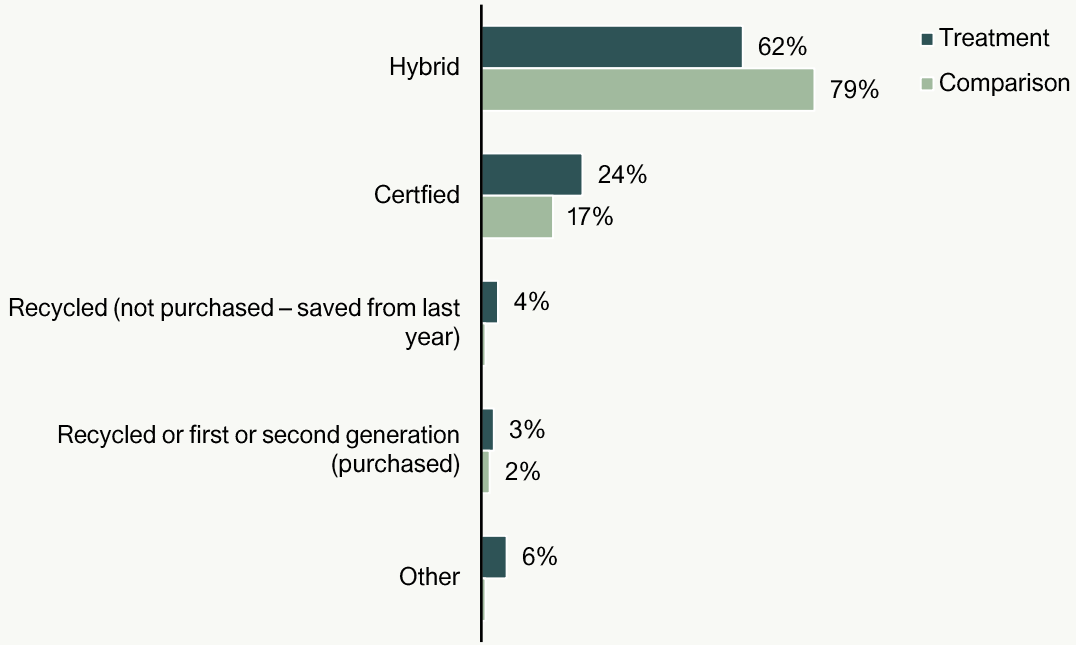
While treatment farmers report planting more certified seeds (24%) than comparison farmers (17%), this difference becomes insignificant after controlling for observable characteristics of both groups (see regression results in Appendix.)

Farmers who planted certified seeds are more likely to report applying all the information received from advisory (42%) compared to farmers who planted hybrid seeds (28%.)

None of the farmers report planting maize seeds of the open-pollinated variety.

Type of Seeds Planted

Q: Which of the following describes the maize seeds your household planted this season? (n = 1006 | Treatment = 605; Comparison = 401) Multi-select question.



Soil Cover and Drainage

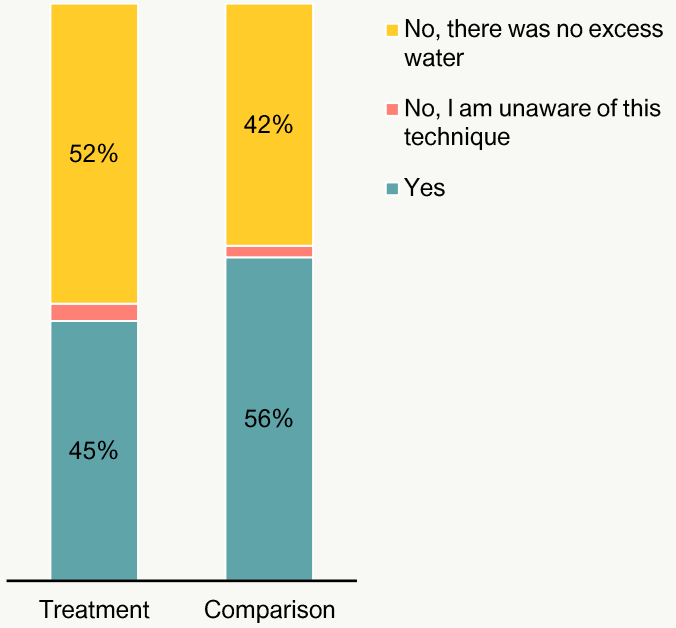
Treatment farmers are more likely to be aware of soil cover techniques than comparison farmers.

Treatment farmers are less likely to say they are ‘unaware’ of using plant material as soil cover (13%) than comparison farmers (34%.) This is significant when controlling for covariates (see regression results in Appendix).

Farmers from Nyeri (46%) and Bomet (42%) were more likely to report that the conditions were not dry enough for them to cover the soil, in contrast to farmers from Baringo (26%.)

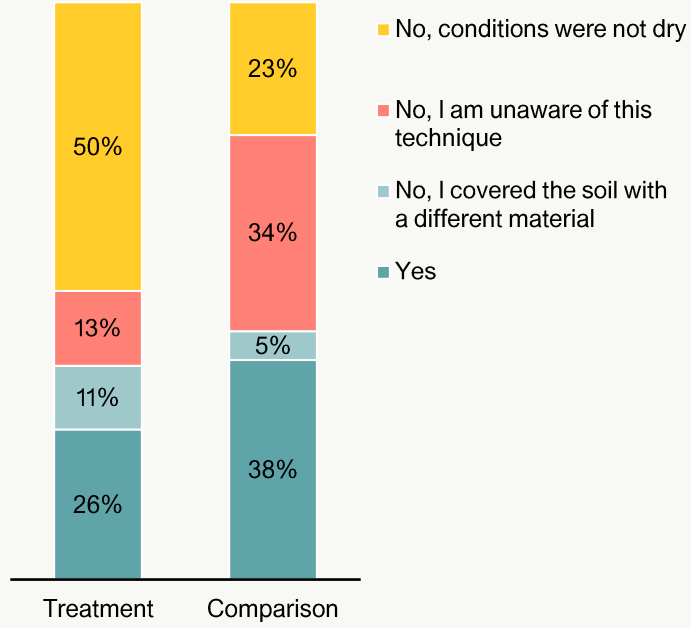
Channels for Water Drainage

Q: Did you create channels to drain excess water in this planting season? (n = 1004 | Treatment = 604; Comparison = 400)



Plant Material as Soil Cover

Q: Did you cover the soil with plant material? (n = 993 | Treatment = 603; Comparison = 390)



Use of Fertilizer

Farmers are equally likely to report using NPK fertilizer, regardless of the type of message they receive.

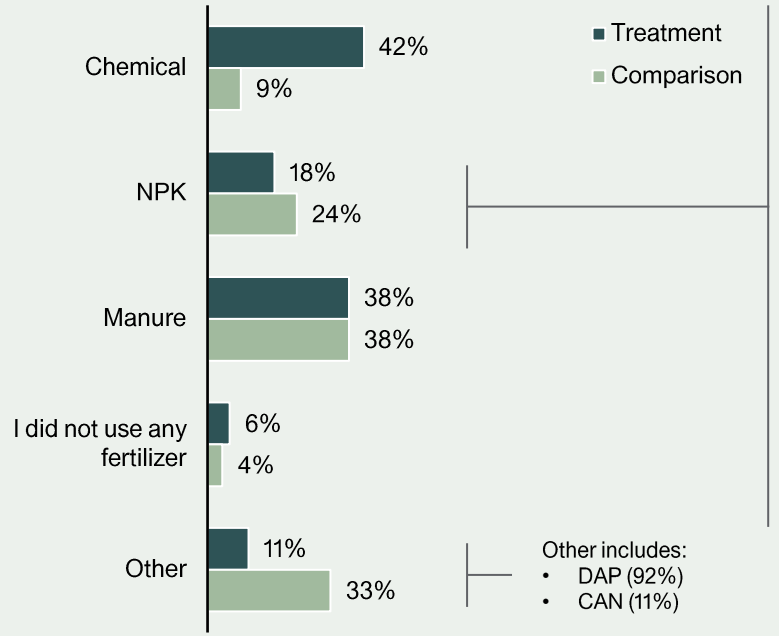
We asked farmers to reflect on the type of fertilizer they used when planting maize this season.

Almost all farmers in both the treatment and comparison groups reported using fertilizer or manure during this Masika season. Farmers in the treatment group are more likely to use chemical fertilizers during the planting stage (42%), whereas comparison farmers are more likely to use manure (38%).

In our regression analysis, we did not find a significant difference in NPK use between the two groups (see regression results in Appendix).

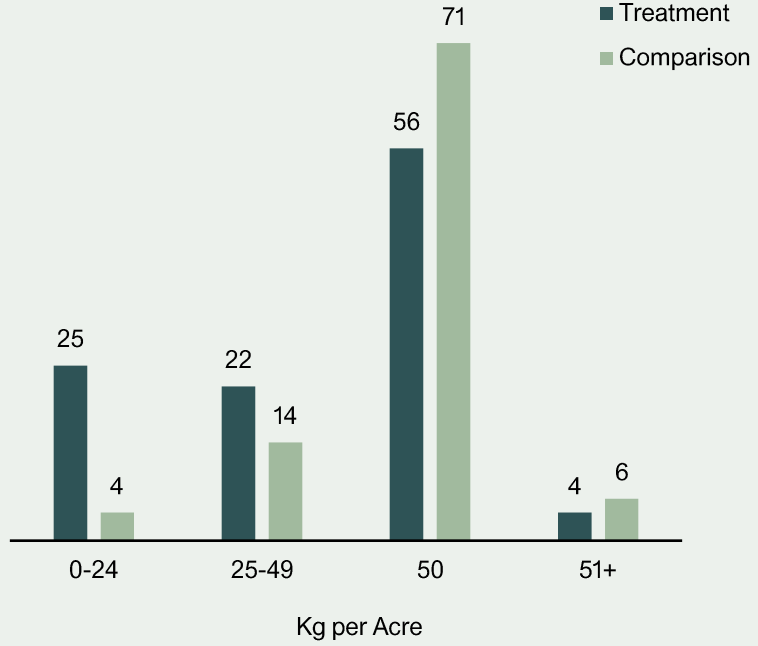
Type of Fertilizer Used

Q: What types of fertilizer did you apply when you planted your maize? (n = 1006 | Treatment = 605; Comparison = 401) Multi-select question.



Amount of Fertilizer Used

Q: Approximately how much [npk] fertilizer per acre of maize did you use this Masika season? (n = 198 | Treatment = 104; Comparison = 94) Open-ended question.



Pest Inspection and Infestation

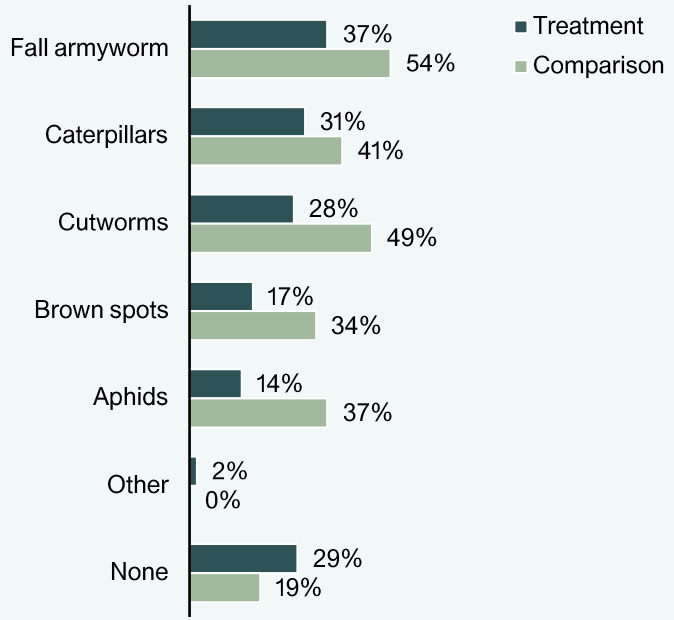
Treatment farmers report lower incidence of pest infestation in their crops this Masika season.

After controlling for observable factors, treatment farmers were 8.7 percentage points less likely to report that 'some,' 'half,' or 'most' of their maize crops were infested with pests during the season compared to comparison farmers (see regression results in Appendix). This could be a result of applying the appropriate moisture management practices recommended by the advisory.

Farmers in the comparison group demonstrated a higher percentage of inspections for various pest types compared to the treatment group. This heightened inspection rate might be attributed to their higher likelihood of experiencing pest infestations.

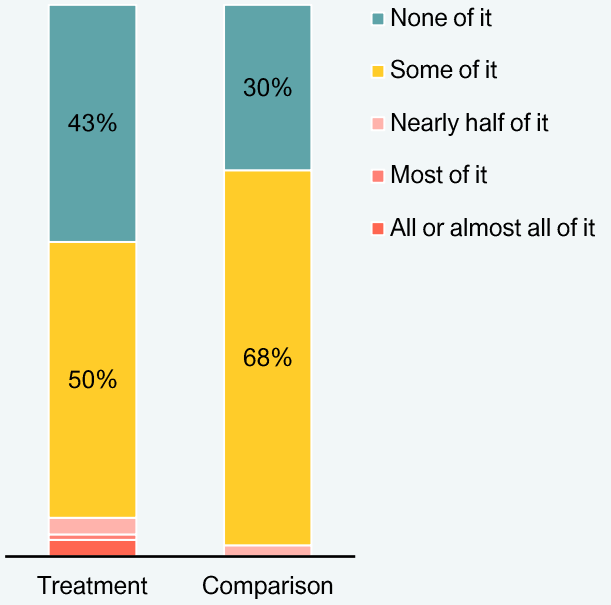
Crop Inspection

Q: Did you inspect your maize crop for any of the following this Masika season? (n = 1006 | Treatment = 605; Comparison = 401) Multi-select question.



Crops Infested with Pests

Q: What proportion of your maize crop so far was infested with pests this Masika season? (n = 1004 | Treatment = 603; Comparison = 401)



Germination and Crop Damage

Farmers receiving TomorrowNow's enhanced advisory were more likely to achieve successful germination of all their seeds and report 'no crop damage' due to weather.

Treatment farmers were 10 percentage points more likely to report that ‘all or almost all’ their seeds germinated when controlling for covariates (see regression results in Appendix).

Farmers who use certified seeds (73%) and reported receiving advisory in the last four months (72%) were also more likely to report successful germination of ‘all or almost all’ of their seeds compared to those using hybrid seeds (70%) or not receiving advisory (68%).

Farmers in the treatment group were 12 percentage points more likely to report that ‘none’ of their crops were damaged due to adverse weather conditions this season (see regression results in Appendix).

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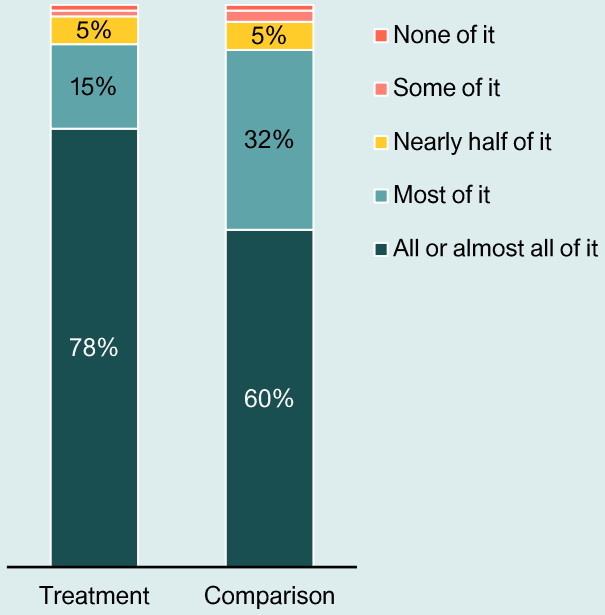
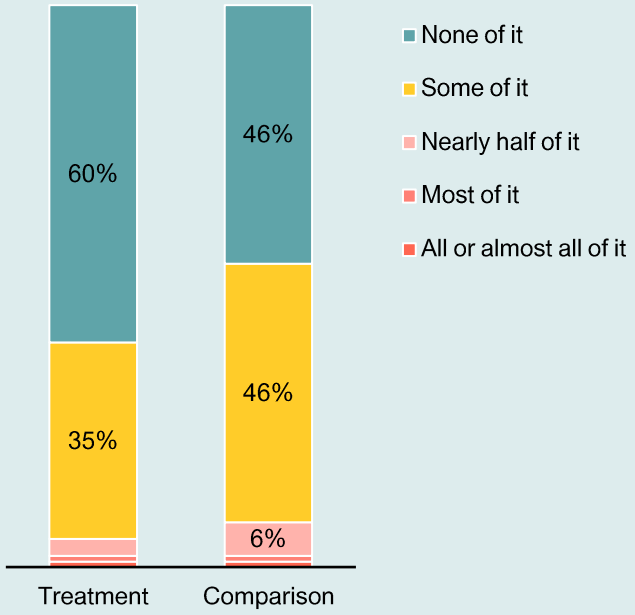
Germination

Q: What proportion of the maize seeds you sowed this Masika season germinated successfully? (n = 1003 | Treatment = 603; Comparison = 400)



Crop Damage

Q: How much of the maize crop you sowed so far got spoilt or damaged due to unforeseen weather conditions this Masika season? (n = 1004 | Treatment = 603; Comparison = 401)



Farming Decisions Based on Advisory

42% of treatment farmers used the SMS advisory to decide when to plant, compared to 57% of comparison farmers.

We directly asked farmers who reported receiving KALRO SMS advisory about the decisions they made using the advisory.

Only 10% of farmers stated that they did not use the advisory to make any farming decisions.

The most common decisions made by farmers in both groups, based on the advisory received, include inspecting for pests and weeds, deciding on sowing and soil preparation time, and selecting the type of fertilizer and seeds to be used.

Blue indicates >10 percentage point difference between groups.

Farming Decisions Based on Advisory

Q: Did you make any of the following decisions on your maize farm using the advisory SMS sent by KALRO in this Masika season? (n = 635 | Treatment = 394; Comparison = 241) Multi-select question.

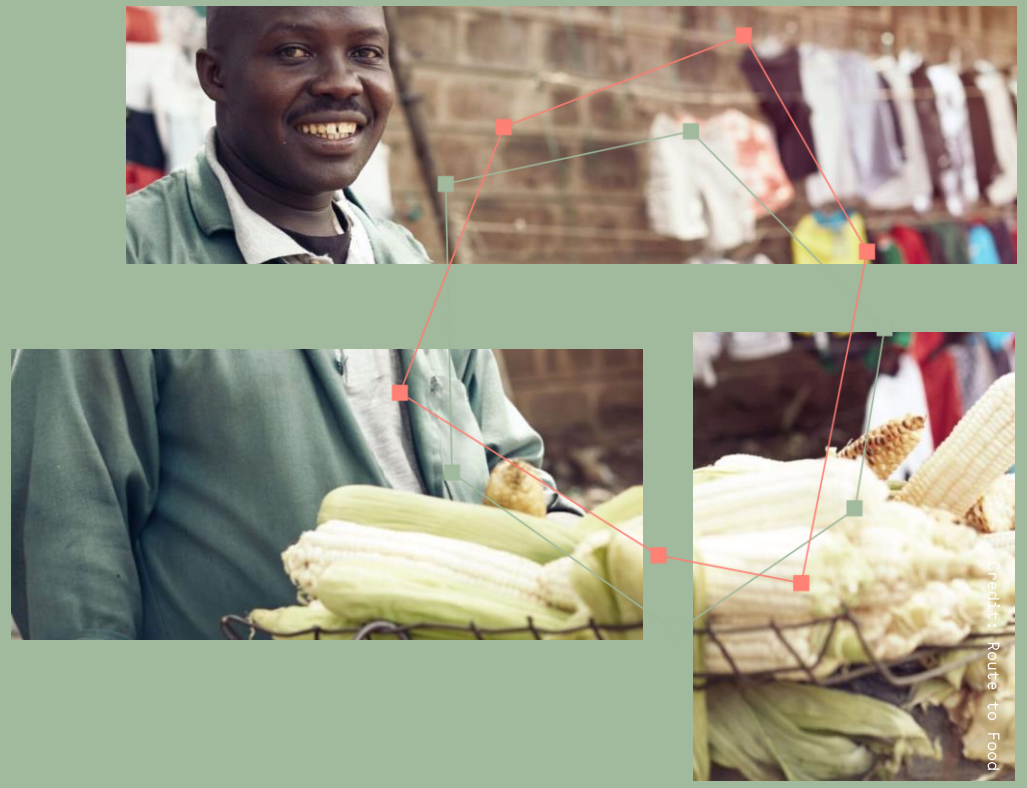
Activity	Treatment	Comparison
Type of fertilizer or pesticides	56%	47%
Quantity of fertilizer or pesticides	38%	37%
Timing for sowing	42%	57%
Timing for soil preparation	52%	51%
Type of seeds	50%	50%
Quantity of seeds	24%	30%
Inspection of pests and weeds	56%	62%
Removal pests and weeds	34%	47%
Building water drainage channels	22%	29%

Experience with Advisory

This section highlights farmers' experience with the advisory they received. These indicators are only collected for farmers who report receiving KALRO advisory messages this season.

The key indicators in this section are:

- **Farmer Satisfaction:** How satisfied are farmers with the advisory they received? What are the top drives for satisfaction?
- **Engagement with Advisory:** How accurate and trustworthy was the advisory for farmers? Do farmers find relevance and apply advisory to their farms?
- **Overall Farming Experience:** How do farmers perceive if they no longer have access to the advisory? Has their farming experience changed because of the advisory?
- **Challenges Faced:** What kind of challenges do farmers face?
- **Ease of Access to Information and Digital Tools:** Do farmers find it easier to access advisory-related information and is there a change in their level of comfort with digital tools?



Farmer Satisfaction

KALRO's SMS advisory service has a Net Promoter Score® of 44, which is good, and similar for both types of messages.

The Net Promoter Score® is a gauge of satisfaction and loyalty. Anything above 50 is considered very good. A negative score is considered poor.

Overall, KALRO's SMS advisory service has a Net Promoter Score of 44. This is good but slightly below our 60 Decibels Agriculture Benchmarks.

Asking farmers to explain their rating provides insight into what they value and what creates dissatisfaction. These details are on the next page.

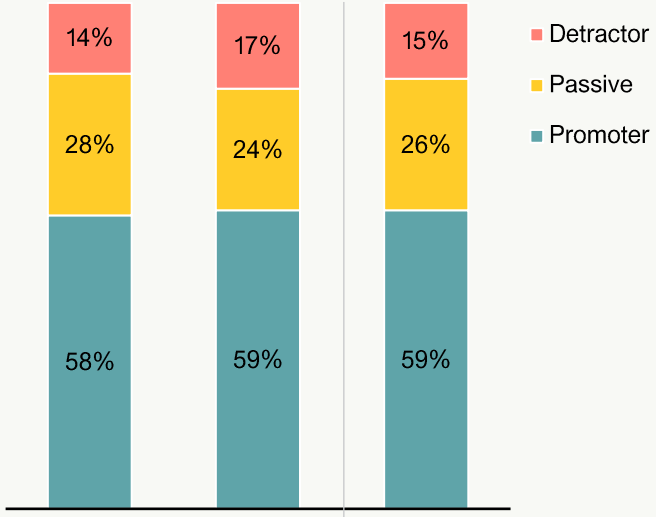
Insight

You're below our benchmark for this indicator.

Increase this score by 3 point to move into the next quintile!

Net Promoter Score® (NPS)

Q: On a scale of 0 to 10, how likely are you to recommend KALRO to a friend or family member, where 0 is least likely and 10 is most likely? (n = 1006 | Treatment = 605; Comparison = 401)



NPS	44	42	44

NPS Benchmarks

Bottom 40%

NPS = % Promoters — % Detractors

9-10 likely to recommend

0-6 likely to recommend

60 Decibels Global Benchmark 585 companies	48
Eastern Africa Benchmark 160 companies	41
Agriculture Benchmark 33 companies	47

Drivers of Farmer Satisfaction

Promoters value empowering and engaging learning experiences while Detractors complain about a lack of practical assistance.

59% are Promoters :)

They love:

	Treatment	Comparison
1.	Engaging and empowering (22% of Promoters; 8% of all respondents)	Informs decision making (24% of Promoters; 9% of all respondents)
2.	Accuracy and reliability (19% of Promoters; 7% of all respondents)	Content on crop management (23% of Promoters; 8% of all respondents)
3.	Content on crop management (17% of Promoters; 6% of all respondents)	Information on pest control and prevention (23% of Promoters; 8% of all respondents)

"It helps me to perfectly control pests in my crops. The service also helps me to decide the best sowing time."

26% are Passives : \

They like:

	Treatment	Comparison
1.	Educational value (26% of Passives; 5% of all respondents)	Educational value (31% of Passives; 5% of all respondents)
2.	Accuracy and reliability (20% of Passives; 4% of all respondents)	Ability to plan (17% of Passives; 3% of all respondents)

But complain about:

1.	Difficult language (10% of Passives; 2% of all respondents)	Irrelevant content (9% of Passives; 1% of all respondents)

"If they simplify the language of the messages, it will help a lot, especially with farmers with no formal education."

15% are Detractors : (

They want to see:

	Treatment	Comparison
1.	Need for practical assistance (54% of Detractors; 5% of all respondents)	Need for practical assistance (43% of Detractors; 4% of all respondents)
2.	Improved communication (19% of Detractors; 2% of all respondents)	Improved credibility and trustworthiness (28% of Detractors; 3% of all respondents)
3.	More relevant content (14% of Detractors; 1% of all respondents)	More relevant content (25% of Detractors; 3% of all respondents)

"The services could be made better by having field officers visit farmers to sensitize us on best ways to utilize the information shared on SMS."

Comprehensibility and Accuracy of Advisory

Comparison farmers are more likely to find 'all' of the advisory easy to understand, while a quarter of farmers in both groups find 'all' the information accurate.

We asked farmers to assess the accuracy and ease of understanding of the advisory messages they received from KALRO.

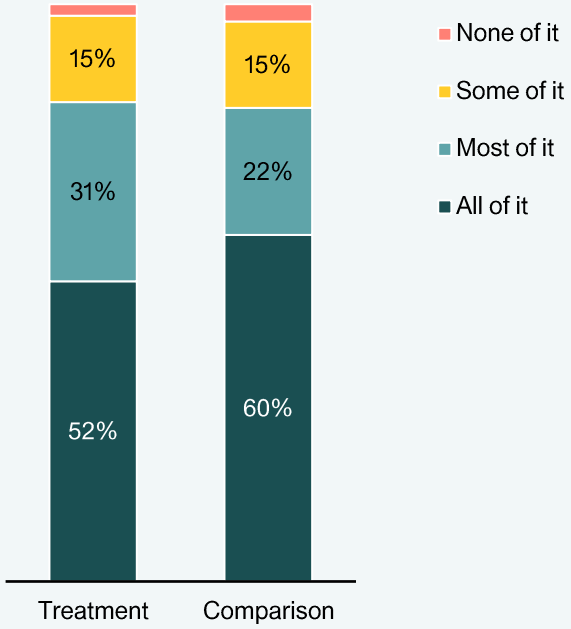
Over half of the farmers understood ‘all’ the information shared in the advisory, while only a quarter of them found ‘all of it’ accurate.

Male farmers are more likely to understand all of the information received from the advisory (60%) compared to female farmers (50%). Similarly, male farmers are more likely to find all of the information accurate (31%) than female farmers (20%).

Farmers with tertiary education are more likely to understand all of the information received from the advisory (69%) compared to farmers with only primary education or below (35%).

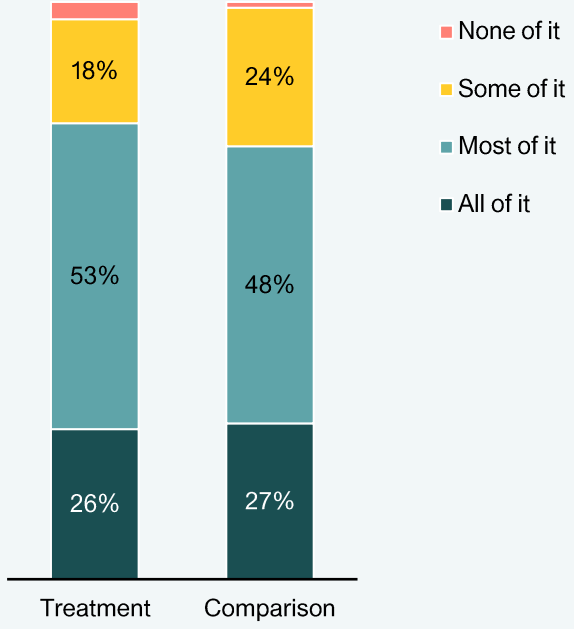
Ease of Understanding Advisory

Q: How much of the information and advice you received through KALRO’s SMS service this Masika season was easy to understand? (n = 622 | Treatment = 389; Comparison = 222)



Accuracy of Advisory

Q: How much of the weather information you received from KALRO’s SMS advisory this Masika season was accurate? (n = 593 | Treatment = 386; Comparison = 207)



Reliability of Advisory

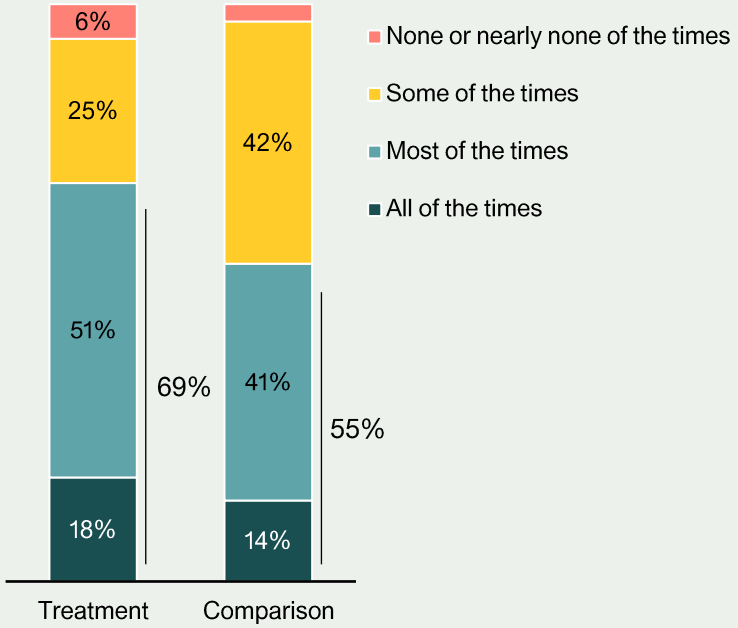
Farmers receiving TomorrowNow messages are more likely to report that the service is timely and trustworthy than farmers in the comparison group.

Treatment farmers have a higher likelihood of both receiving the information when needed and finding it very trustworthy.

Farmers who consistently receive the advisory when needed are significantly more likely to perceive all the information as accurate (66%) compared to farmers who only receive it occasionally (10%). This indicates that the timeliness of receiving the advisory plays a crucial role in shaping farmers' perception of its accuracy.

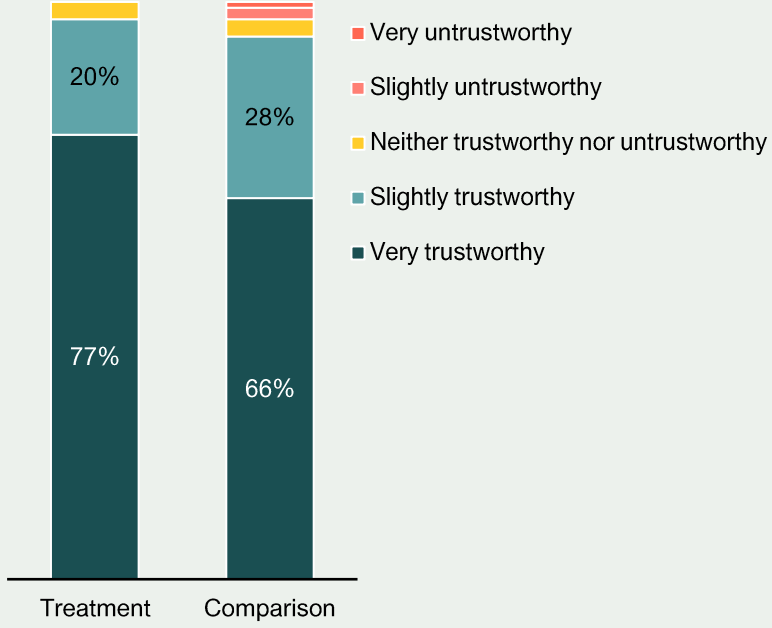
Timeliness of Advisory

Q: How often did you receive information or advice for your maize farm from KALRO exactly when you needed it this Masika season? (n = 598 | Treatment = 389; Comparison = 209)



Trustworthiness of Advisory

Q: Do you find KALRO's SMS advisory trustworthy or not? Was it: (n = 600 | Treatment = 388; Comparison = 212)



Relevance of Advisory

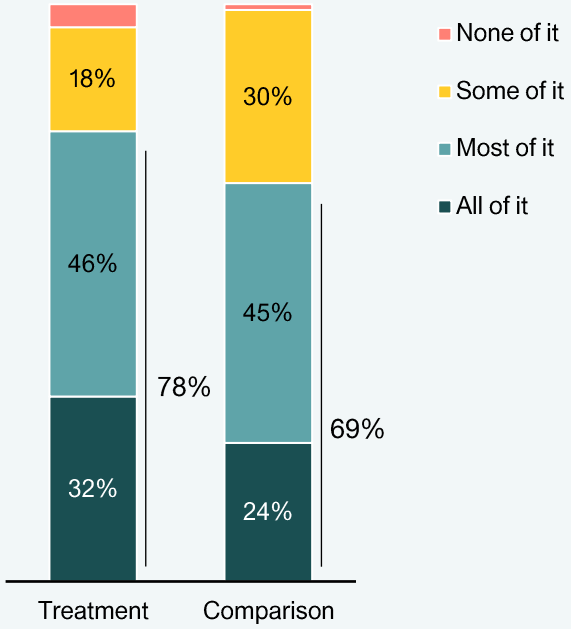
78% of treatment farmers and 69% of comparison farmers say ‘all’ or ‘most’ of KALRO's advisory messages are relevant to their farm.

We assessed whether farmers found the information in the advisory messages relevant to their maize farming practices.

Farmers in the treatment group were more likely to report that “all” or “most” of the advisory was relevant to their farm (78%), compared to farmers in the comparison group (69%).

Relevance of Advisory to Farm

Q: How much of the information and advice you received through KALRO’s SMS service this Masika season was relevant to your farm? (n = 609 | Treatment = 386; Comparison = 223)



Application of Advisory

Treatment farmers more likely to apply ‘all’ advisory than comparison farmers, but relevance and lack of inputs remain barriers to adoption.

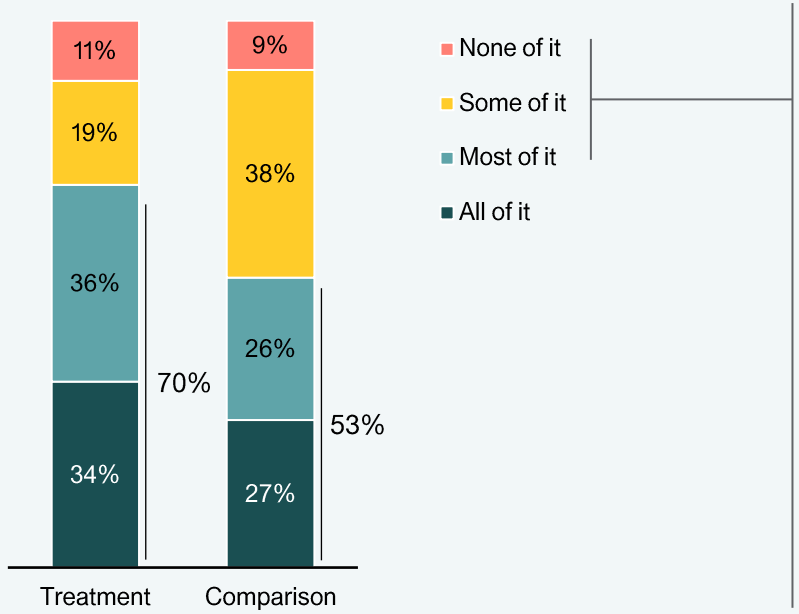
We asked farmers to reflect on how much of the advisory they applied to their maize farm this Masika season.

Treatment farmers are more likely to report applying the advisory to their maize farming practices, with a higher proportion applying ‘all’ or ‘most’ of the information. However, a slightly higher proportion of treatment farmers also reported applying ‘none’ of the advisory (11%) compared to the comparison group (9%). The most common reasons for not applying the advisory were its perceived irrelevance and lack of required inputs.

To increase adoption, KALRO and TomorrowNow.org could explore partnerships with input suppliers.

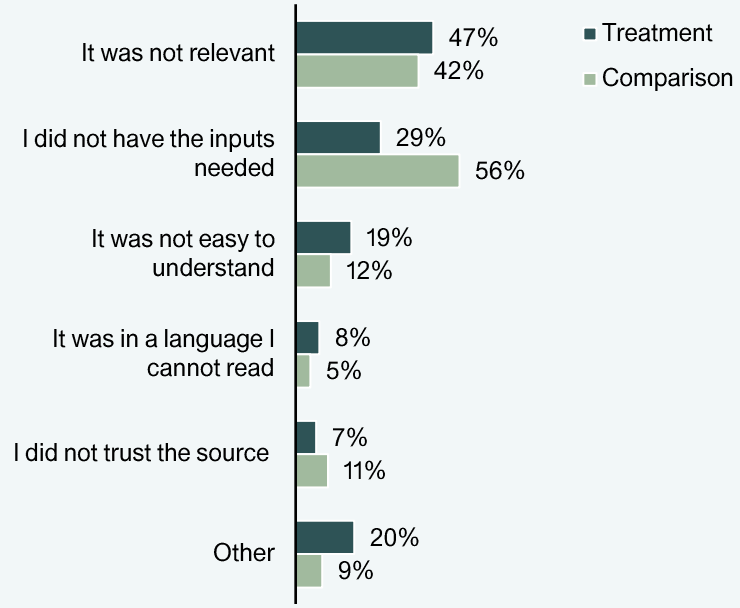
Application of Advisory to Farm

Q: How much of KALRO’s SMS advisory did you apply to your maize farm this Masika season? (n = 628 | Treatment = 393; Comparison = 235)



Non-Application of All Advisory Received

Q: Why did you not apply all the information you received from KALRO to your maize farm this Masika season? (n = 438 | Treatment = 260; Comparison = 178) Multi-select question.



Overall Farming Experience

The advisory messages are improving farming experience, as most farmers would be very disappointed if they lost access to it, and more than 90% report improvements in their overall farming experience due to the advisory.

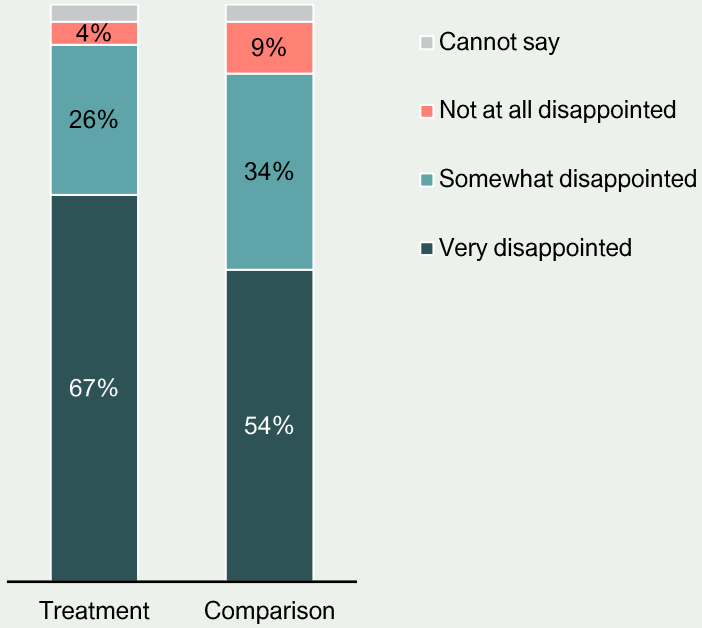
We assessed the farmers' perceived impact of the SMS advisory by asking farmers about their feelings if they could no longer use the service and its impact on their overall farming experience.

Treatment farmers were marginally less likely to report they would not be disappointed at the loss of the services, but significantly more likely to report that their farming season was 'much better' as a result of the advisory (72%), compared to the comparison group (52%).

Farmers who applied 'all' the information from the advisory are much more likely to report feeling very disappointed (92%) compared to farmers who applied only some of it (39%).

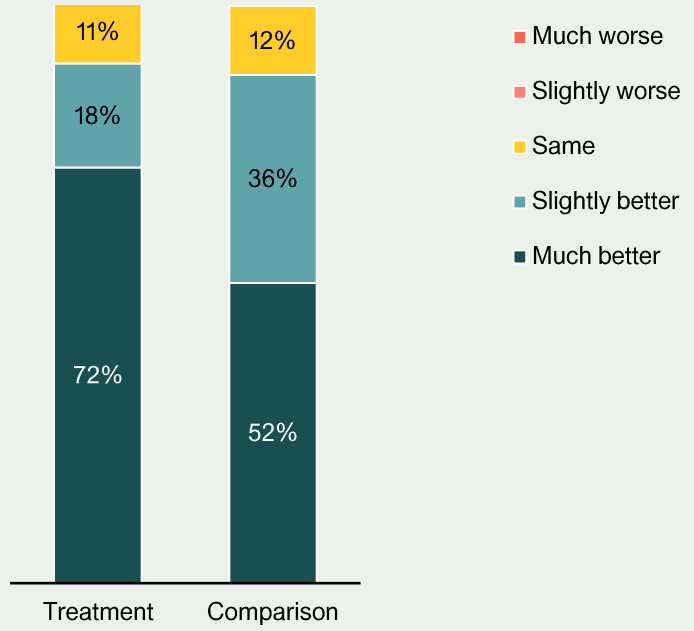
Perception of Non-Access to Advisory

Q: How would you feel if you could no longer receive and use KALRO's SMS advisory? Would you be: (n = 634 | Treatment = 393; Comparison = 241)



Overall Experience with Farming

Q: Overall, has your experience of this Masika season been better, the same, or worse because of KALRO's SMS advisory? Has your experience of the farming season been: (n = 626 | Treatment = 392; Comparison = 234)



Farmer Challenges

91% of treatment farmers and 88% of comparison farmers did not experience a challenge with the advisory.

9% of treatment farmers and 12% of comparison farmers report experiencing a challenge with the advisory. This is lower than our 60dB Agriculture benchmark challenge rate of 20%.

Farmers who report experiencing a challenge with the SMS advisory service (NPS: -27) are less satisfied than those who didn't (NPS: 53). Unresolved challenges can encourage negative word-of-mouth and detract from satisfaction and positive impact.

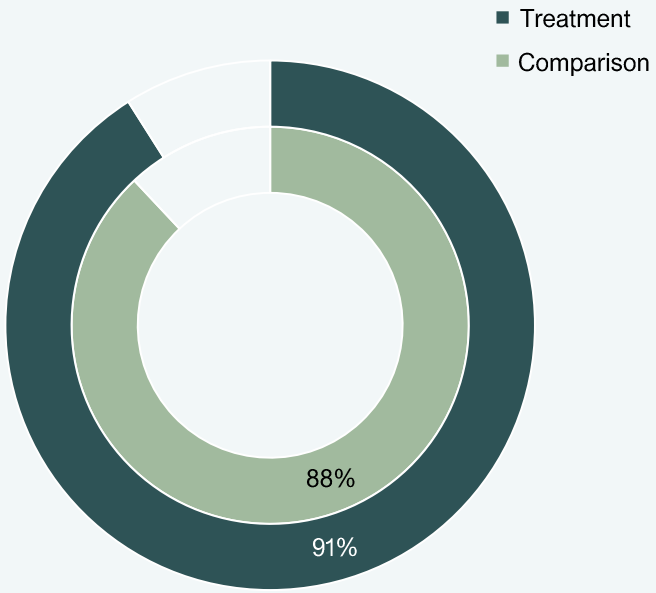
The next page shows the most common issues experienced.

Challenge Rate Benchmark--Agriculture

TOP 20%

Farmers Reporting "No" to Challenges

Q: Did you face any challenges with KALRO's SMS advisory this Masika season? (n = 629 | Treatment = 393; Comparison = 236)



Farmer Challenges: Top Issues

Farmers most commonly talk about difficulty in understanding the SMS advisory and language barriers.

Challenges are categorized based on farmer experience rather than assigning fault. These challenges can be grouped into four different themes, each potentially requiring a different approach for resolution. It is possible that both farmers and Research Assistants may not always know which specific category a challenge falls into.

- Technical fault - there is something wrong with the advisory.
- Mismatched expectations – the farmer says the advisory isn't working because they expected it to work differently but it is working as intended.
- Misuse - the farmer isn't using the product properly; often not deliberately but through lack of awareness/training.
- External factors – sometimes factors outside of the control of farmers affect usage and therefore impact. This could be theft, war, environmental.

Most Common Issues for Farmers Who Say They've Experienced a Challenge

Q: Please briefly explain the challenge you have faced. (n = 64 | Treatment = 36; Comparison = 28). Open-ended, coded by 60 Decibels.

	Treatment	Comparison	
Mentioned **difficulty understanding**	47% (3% of all respondents)	75% (5% of all respondents)	"Some of the wording is hard to understand which makes it difficult to implement." -Male, 40, Comparison
Talked about a **language barrier**	19% (1% of all respondents)	11% (1% of all respondents)	"I don't understand English much, so I struggle with the SMS language."-Female, 43, Treatment
Reported **infrequent communication**	17% (1% of all respondents)	7% (1% of all respondents)	"I rarely receive messages. In fact, the last SMS I received was late April."-Male, 44, Treatment

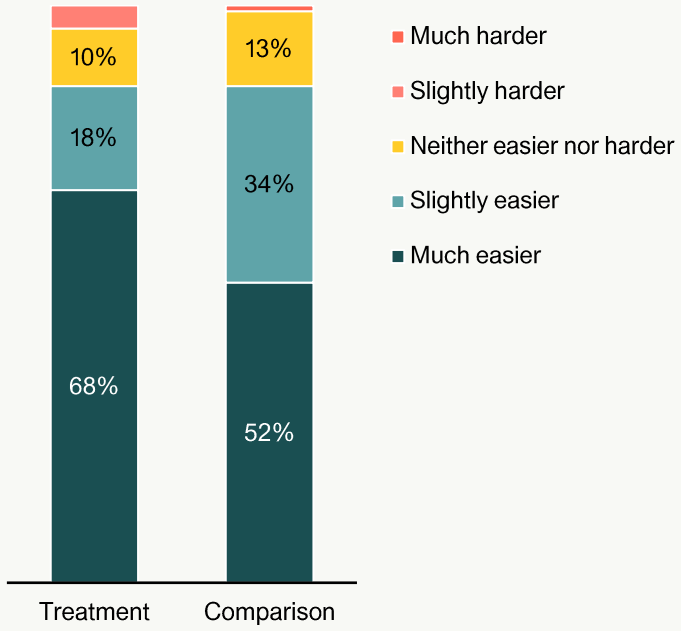
Digital Empowerment

Treatment farmers find it ‘much easier’ to access advisory and become ‘much more comfortable’ with using digital tools for farming due to the SMS advisory service.

Overall, KALRO and TomorrowNow.org are providing easy access to information and advisory for farmers, making them more comfortable with using digital tools for farming.

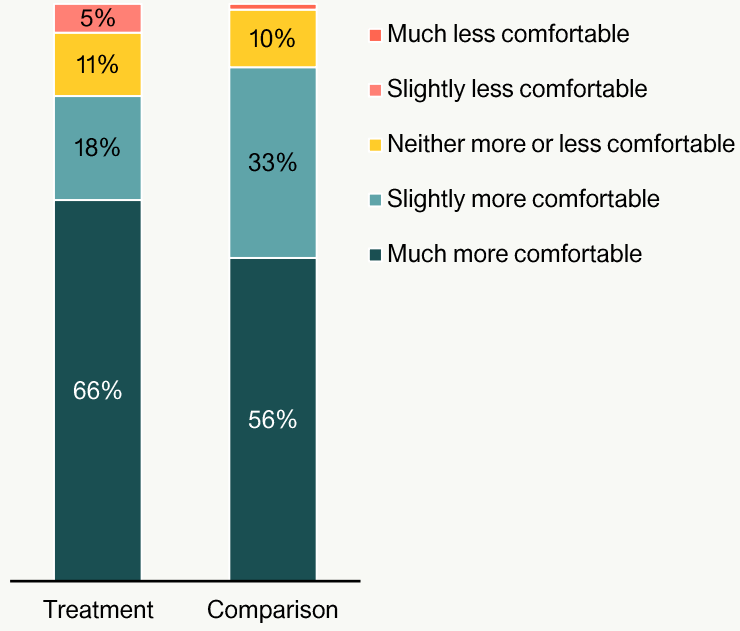
Change in Access to Similar Information

Q: Did KALRO’s SMS advisory make it easier or harder for you to access maize farming-related information and advice? (n = 635 | Treatment = 394; Comparison = 241)



Change in Comfort with Digital Tools

Q: Has the use of the KALRO’s SMS advisory changed how comfortable or uncomfortable you feel with using digital (i.e., mobile based) tools for farming? (n = 635 | Treatment = 394; Comparison = 241)

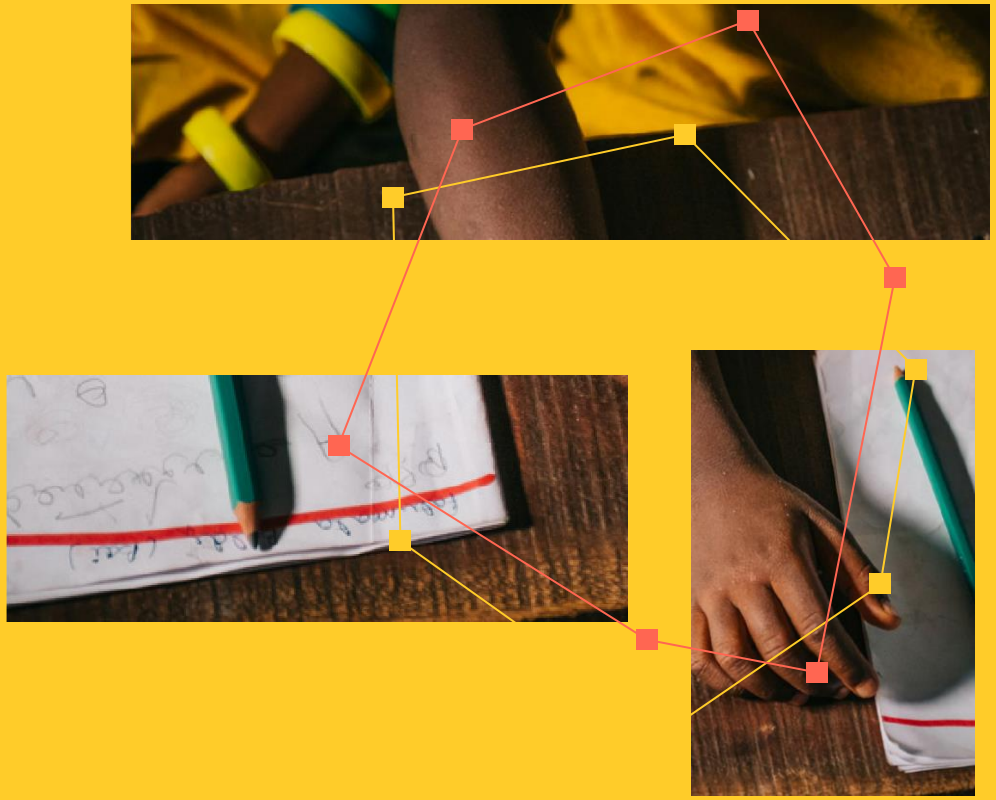


“Their accuracy is unmatched. They once said it would rain in Narok and it did just as they predicted. It's trustworthy.”

- Male, 74, Treatment

Appendix

- Regression Table
- Calculations & Definitions
- Summary Of Data Collected
- Detailed Benchmarking Comparison
- How to Make the Most of These Insights



Regression Results

Treatment-effects estimation estimator: regression adjustment

Estimator: Logit

Number of observations: 938

	(1) Use of certified seeds	(2) Use of NPK	(3) Unaware of soil cover techniques	(4) No pest infestation	(5) All seeds germinated	(6) No crop loss
ATET	-0.003	-0.064*	-0.188***	-0.087**	0.100**	0.124***
Standard Errors	(0.032)	(0.031)	(0.031)	(0.035)	(0.034)	(0.037)

Covariates included in the regression (controlled for): Gender, Age, Baringo County, Bomet County, Completed Highschool, Gender of Head of Household, Smartphone Use, Household Size-Adults, Household Size-Children, Land Size (Acres), Main Income Source (Non-Farm)

How to read:

Logit fits a logit model for a binary response by maximum likelihood. It models the probability of a positive outcome given a set of regressors.

ATET is the average treatment effect on the treated, or the change in probability of an outcome if an individual receives TomorrowNow-enhanced messages. For example: A farmer is 19 percentage points less likely to report being unaware of soil cover techniques if they receive TomorrowNow-enhanced messages.

* Significant at 90% confidence
** Significant at 95% confidence
*** Significant at 99% confidence

Calculations & Definitions

For those who like to geek out, here's a summary of some of the calculations we used in this deck.

Metric	Calculation
Net Promoter Score®	The Net Promoter Score is a common gauge of customer loyalty. It is measured through asking customers to rate their likelihood to recommend your service to a friend on a scale of 0 to 10, where 0 is least likely and 10 is most likely. The NPS is the % of customers rating 9 or 10 out of 10 ('Promoters') minus the % of customers rating 0 to 6 out of 10 ('Detractors'). Those rating 7 or 8 are considered 'Passives'.

Detailed Benchmarking Comparison

Treatment farmers are observed to have slightly more positive changes in farming outcomes, contribution, risk and experiences than comparison farmers.

Comparison to benchmarks can be useful to identify where you are under or over-performing versus peers and help you set targets. We have aligned your results to the Impact Management Project framework – see the next slide.

Information on the benchmarks is found below:

TomorrowNow Data:

# treatment	605
# comparison	401

60dB Global Average:

# companies	585
# customers	152k+

60dB Eastern Africa Average

# companies	160
# customers	41k+

60dB Agriculture Average

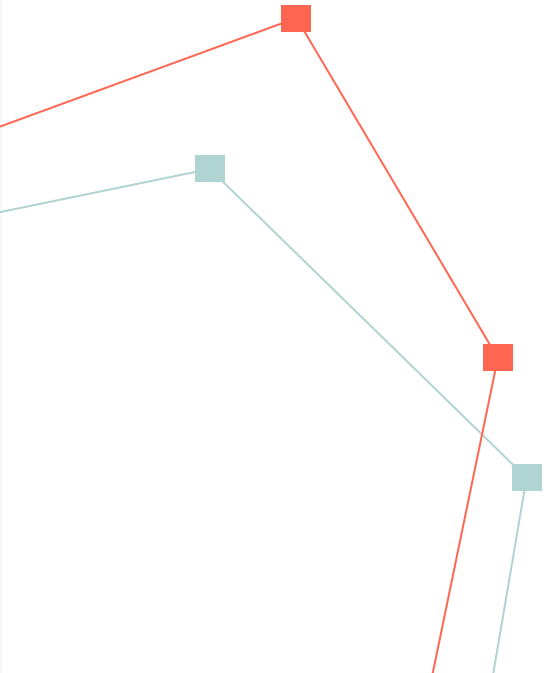
# companies	33
# customers	8k+

Comparison of Company Performance to Selected 60dB Benchmarks

Dimension	Indicator	Treatment	Comparison	60dB Global	60dB Eastern Africa	60dB Agriculture
Who	% female	53	50	42	71	27
Risk	% of farmers facing challenges	9	12	19	26	20
Experience	Net Promoter Score	44	42	48	41	47

Summary Of Data Collected

1006 phone interviews completed in May - June 2023.



Methodology

Survey mode	Phone
Country	Kenya
Language	Swahili, English, Luo and Kikuyu
Dates	May - June 2023

Responses Collected

Customers (Treatment)	605
Customers (Comparison)	401

Accuracy

	Treatment	Comparison
Confidence level	~95%	~95%
Margin of error	~3%	~4%
Response rate	53%	62%
Average time p/interview	19 mins	20 mins

Research Assistant Gender

Female	4	3
Male	5	4

Thank You For Working With Us!

Let’s do it again sometime.

About 60 Decibels

60 Decibels makes it easy to listen to the people who matter most. 60 Decibels is an impact measurement company that helps organizations around the world better understand their customers, suppliers, and beneficiaries. Its proprietary approach, Lean Data, brings customer-centricity, speed and responsiveness to impact measurement.

60 Decibels has a network of 830+ trained Lean Data researchers in 70+ countries who speak directly to customers to understand their lived experience. By combining voice, SMS, and other technologies to collect data remotely with proprietary survey tools, 60 Decibels helps clients listen more effectively and benchmark their social performance against their peers.

60 Decibels has offices in London, Nairobi, New York, and Bengaluru. To learn more, visit 60decibels.com.

We are proud to be a Climate Positive company.

Your Feedback

We’d love to hear your feedback on the 60dB process; take 5 minutes to fill out our feedback survey unique link!

Acknowledgements

Thank you to TomorrowNow and KALRO for their support throughout the project.

This work was generously sponsored by the Bill & Melinda Gates Foundation .

KALRO always provide free and accurate information.
KALRO enabled me to increase my crop productivity and yield.
I like the simple and efficient way KALRO is using to reach farmers.

Ellie Turner

Hanadi Al-Saidi

Darrell Kharsyntiew

Saisi Emma

Ivy Kinyanjui

Wanjiku Mwangi

Millicent Magak

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