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# Digital Tools for Smallholders in Egypt: The Launch of a New Price Monitoring Tool - Mahsoly

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## TABLE OF CONTENTS

Motivation .....	3
Project Background .....	3
Sample Overview.....	5
Constraints to Adoption of Digital Agricultural Tools.....	6
Key Insights from Follow-up Survey.....	9
Introducing a Demand-driven Tool: The Price Monitoring Tool.....	11
User Feedback on the New Price Monitoring Tool: A Qualitative Review.....	14
Conclusion.....	15
References .....	16
Appendix 1.....	17

## Motivation

The rapid adoption of mobile phones in agricultural and production systems provides an avenue to unlock the potential of digital innovations to transform smallholder agriculture in low- and middle-income countries. Previous research (Aker, 2011; Aker & Cariolle, 2023) highlights how the adoption of digital tools can enhance farmers' profits and marketing outcomes by improving market efficiency through better supply and demand matching. Other research similarly emphasizes how digital innovations can facilitate agricultural transformation and transform the functioning of markets by addressing multiple forms of institutional and market failures (e.g., Courtois and Subervie, 2015; Aker et al., 2016; Abate et al., 2023).

However, despite these advantages and the availability of numerous digital tools for agriculture, their adoption remains low and uneven across Africa, where agricultural markets are still underdeveloped (e.g., Abate et al., 2023; Aker & Cariolle, 2023). Smallholder farmers in developing countries, including Egypt, face challenges in accessing essential information, which limits their ability to leverage market opportunities and maximize profitability.

Several factors may explain the slow and varied adoption of digital innovations among smallholder farmers in Africa. Supply-side constraints include inadequate public and private investment in complementary infrastructure, unsustainable business models, and uneven rates of technological change (Abate et al., 2023). On the demand side, barriers include lack of digital literacy, inadequate context-specific needs assessments, digital divides, and issues with accessibility, usability, and user trust.

In Egypt, the slow scale-up and uptake of digital tools can be partly attributed to a lack of awareness among smallholder farmers about the benefits of these technologies. Additionally, rural communities in less developed or remote areas often lack the necessary infrastructure, such as internet connectivity, to effectively use these tools (OBG, 2022; AGBI, 2023).

Given the limited understanding of the primary challenges hindering Egyptian farmers' adoption of digital technologies and the strategies needed to enhance their access to these innovations, this paper aims to utilize an extensive survey of smallholder farmers in Egypt to: (i) examine the constraints to adoption of digital agricultural tools in Egypt; and (ii) assess the impact of farmer training programs on the awareness and adoption of digital tools, using the Mahsoly mobile application and its new price monitoring tool as a case study.

## Project Background

The International Food Policy Research Institute (IFPRI) is engaged in providing research-based policy solutions under the Evaluating Impact and Building Capacity (EIBC) project funded by the United States Agency for International Development (USAID). To foster innovation in Egypt's agricultural sector, IFPRI collaborated with Egypt's Ministry of Agriculture and Land Reclamation (MALR) through the EIBC project, to build a price monitoring and dissemination tool (Mobile App) that can provide marketing and price information to farmers and experts in Egypt.

In an effort to promote public private partnerships and support young entrepreneurs in the field of agriculture innovation, IFPRI in collaboration with MALR chose to build and implement this new tool with Mahsoly, a promising Egyptian private startup company established in February 2021 in the Agritech field that owns a mobile application and serves thousands of Egyptian farmers. The Mahsoly Mobile application offers various features to support farmer activities, offering a market for crops, a market for farm-

lands, an inputs shop and general farmer advisory services, among other agricultural services of interest to farmers. So far this multifeatured platform has over 200,000 downloads.

To benefit from the existing base of subscribers in Mahsoly, IFPRI worked with the Mahsoly team to develop and customize a new price monitoring tool to be an added feature on Mahsoly's homepage. The objective was to create a tool that can collect price information of cultivated horticultural crops from farmers, through encouraging farmers to self-report the price information of the crops they sold at the farm gate level. This collected self-reported data would then be processed and disseminated back to farmers and will inevitably promote access to price information and address issues related to smallholders' marginalization in agri-food value chains.

This new price monitoring feature, which has been in development for the past two years, represents a major milestone for the Mahsoly platform. Today, this tool can provide Egyptian farmers—particularly smallholders—timely price data that can lead to more informed decisions on sales and crop cultivation patterns. By addressing key challenges such as market transparency and access to pricing information, the tool empowers farmers to expand their market reach, negotiate better deals, and improve profitability. In addition, by developing a backend portal to the new tool, we can now also serve a wider network of stakeholders, including MALR and researchers, whereby the backend portal can provide a professional user interface to access, download and analyze price data to equip decision makers in monitoring price disparities and inform related marketing and agricultural policies.

This public-private partnership, driven by IFPRI, led to the official launch of the new price monitoring feature within Mahsoly's mobile application. The feature was officially launched on June 5, 2024 in a public dissemination event held in Cairo under the title of “Launch of Mahsoly: New Price Monitoring Tool for Smallholders”. The event was attended by high-level representatives from MALR, donor organizations, agricultural experts, and key stakeholders, all united in their mission to enhance digital agriculture in Egypt.

Following the launch event, Mahsoly team started to actively promote the new tool through its different marketing channels with different farmer organizations<sup>1</sup>. In this report we present findings from a sample of 2900 farmers from Menya and Benisuef governorates who received targeted training and capacity-building interventions on the use of different agricultural digital tools, including Mahsoly and its new price monitoring feature. To assess the impact of these interventions, a USAID-funded survey was conducted at baseline on September 2023 before launching Mahsoly or disseminating any training interventions; a follow-up survey was later conducted between August 15<sup>th</sup> and September 15<sup>th</sup>, post the Mahsoly launch and the dissemination of trainings and promotional efforts.

This survey aims to measure how the trainings and promotional interventions impacted farmers' awareness, uptake, utilization and overall farmer interest in the services offered on the Mahsoly platform, including the new price monitoring feature. The findings in the report sheds light on the positive impact of marketing and nudging interventions on farmers continued engagement with digital platforms like Mahsoly, and how Mahsoly, if became widely promoted, can be a powerful tool to support farmer marketing and commercialization practices.

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<sup>1</sup> In parallel, IFPRI organized two outreach events to introduce and demonstrate the new price monitoring feature to the end user, the farmers. These outreach efforts aimed to promote, raise awareness, and train farmers on using the new price monitoring tool. The organized outreach events witnessed active participation from farmers in Lower and Upper Egypt and considered only a starting point of an intensive marketing and outreach plan to be led by the Mahsoly marketing team.

## Sample Overview

The sample is comprised of 2900 smallholder farmers in two governorates in Egypt, Minya and Benisuef. These farmers belong to about 30 farmer organizations in Upper Egypt and have received different targeted training and capacity-building interventions on the use of different agricultural digital tools, including Mahsofy. These digital promotion and training interventions were supported and/or provided by Mahsofy, the United States Agency for International Development (USAID), the Agricultural Innovation Project (AIP) of the German Corporation for International Cooperation (GIZ) and the CGIAR Research Initiative “From Fragility to Resilience in Central and West Asia and North Africa (F2R CWANA). The objective of these interventions was to promote the use of digital mobile apps to smallholder farmers in Egypt and boost the adoption of digital tools, like Mahsofy, for agricultural market transformation.

Table 1 provides an overview of the demographic and household characteristics of the sample of 3332 farmers surveyed at baseline in September 2023 through a phone survey. These farmers come from a database of the sampled 30 farmer organizations in Minya and Benisuef. Essentially half (49 percent) of the interviewed farmers are from Benisuef and the remaining (52 percent) are from Minya. Most farmers interviewed are male (85 percent), with an average age of 45 years. The average household size is reported to be 6, highlighting the relatively large family structures typical in rural areas. Based on self-reported literacy, about 65 percent of farmers had completed at least primary school and approximately 35 percent reported having no formal education. Over half of the farmers (57 percent) reported owning land, while the majority (70 percent) stated that they rent land. Additionally, 40 percent of the sample reported owning livestock that generate agricultural income. For crop cultivation, patterns reveal that wheat is the dominant crop, nearly all farmers (91 percent) report to be planting wheat. Clover is also a common crop, likely as a complementary crop in rotation systems or for livestock feed, grown by more than half of the sample (55 percent).

**Table 1: Farmers' demographic and household characteristics**

Household Characteristics	Mean	Std. Dev.
Governorate (share)		
Benisuef	0.488	0.500
Minya	0.512	0.500
Age (years)	44.575	13.026
Male (%)	0.846	0.361
Household size (#)	5.667	2.56
Education category (share)		
No education	0.352	0.48
Primary	0.05	0.22
Secondary	0.067	0.25
Post-secondary	0.532	0.499
Land ownership	0.574	0.495
Land rental	0.685	0.464
Livestock ownership	0.60	0.49
Involved in wheat cultivation	0.907	0.29
Involved in clover cultivation	0.548	0.498
Number of observations	3332	

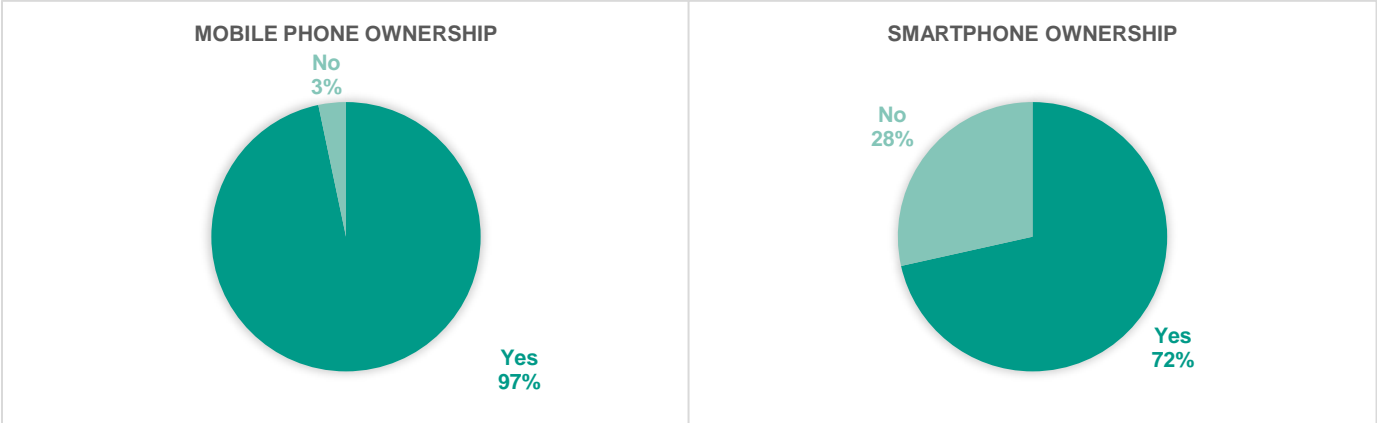
Source: Authors' calculations based on (baseline) household data.

## Constraints to Adoption of Digital Agricultural Tools

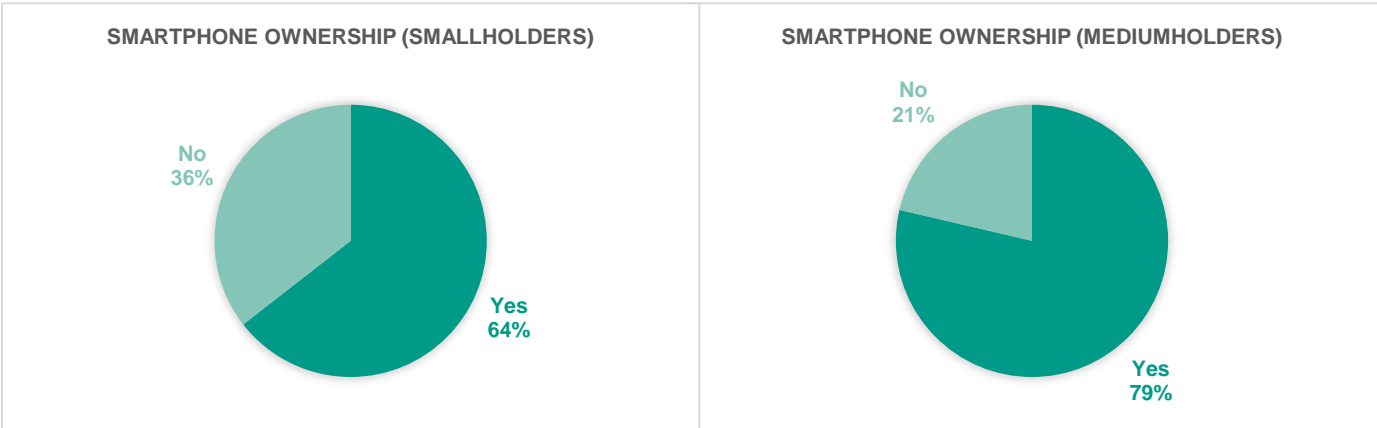
To understand the landscape of digital infrastructure (including mobile phone ownership and access to internet) in Minya and Benisuef, farmers were asked to report on their access to each of these infrastructures. Given that most digital agricultural apps need smartphones, we elicit ownership of ordinary and smartphones. Baseline survey findings reveal that the majority of farmers (97 percent) own a mobile phone, whereas only 72 percent own a smartphone (Figure 1). When revisiting this analysis by farm size, it appears that medium and large farmholders are more likely to own a smartphone (79 percent) than smallholders (64 percent) (Figure 2).

Moreover, when it comes to access to the internet, farmers were asked to report on their access to both home internet data and mobile data. Survey findings indicate that only 33 percent of farmers have access to home internet data, while a larger sample (47 percent) have some access to mobile data (25 percent of which have regular access) (Figure 3). Similarly, analyzing this by farm size, depicts that farmers with larger farm size have better access both to home internet (41 compared with 26 percent) and more regular access to mobile data (30 compared with 18 percent).

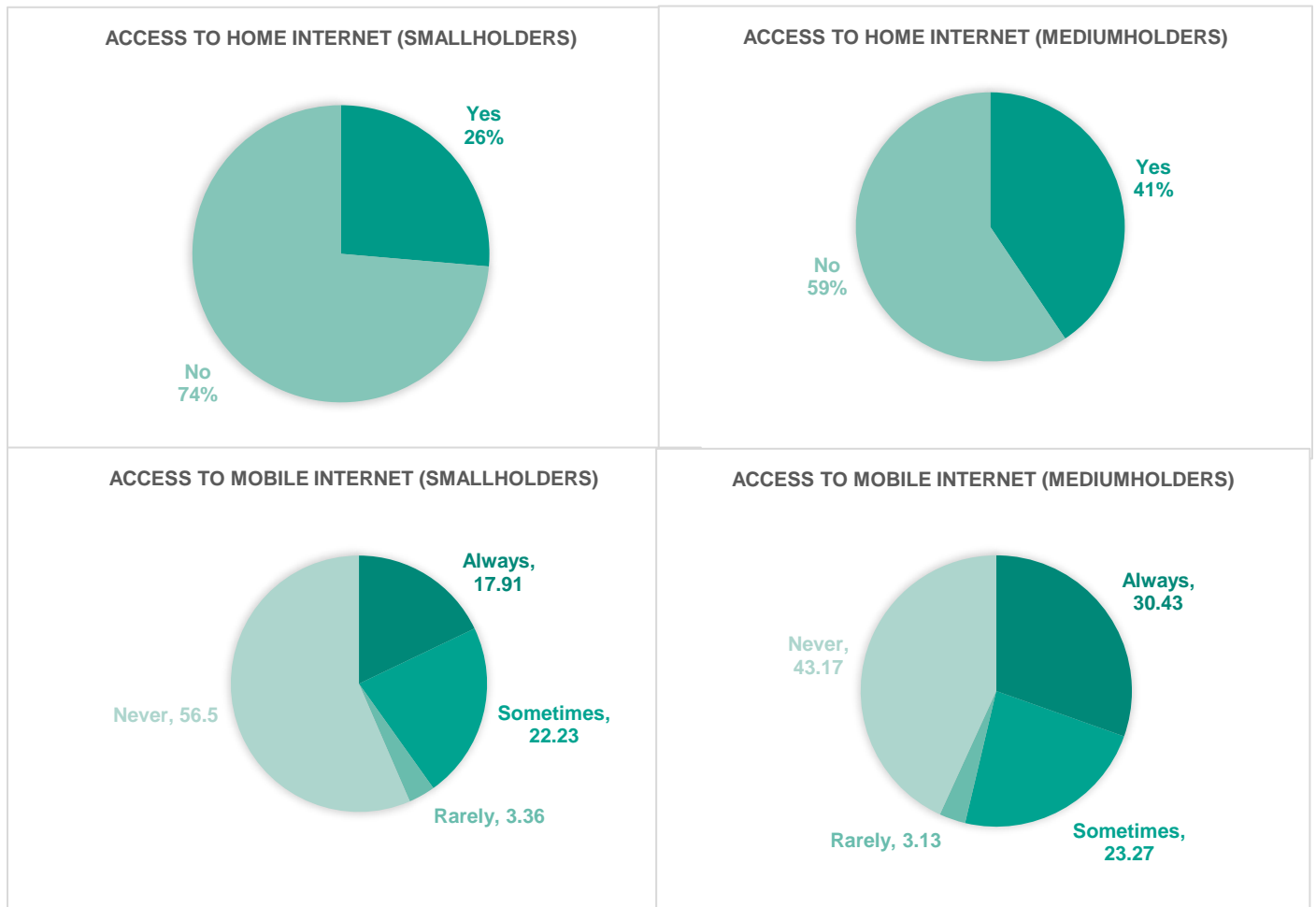
**Figure 1: Mobile phone and smartphone ownership among the sample.**



**Figure 2: Smartphone ownership (smallholders vs medium holders)**

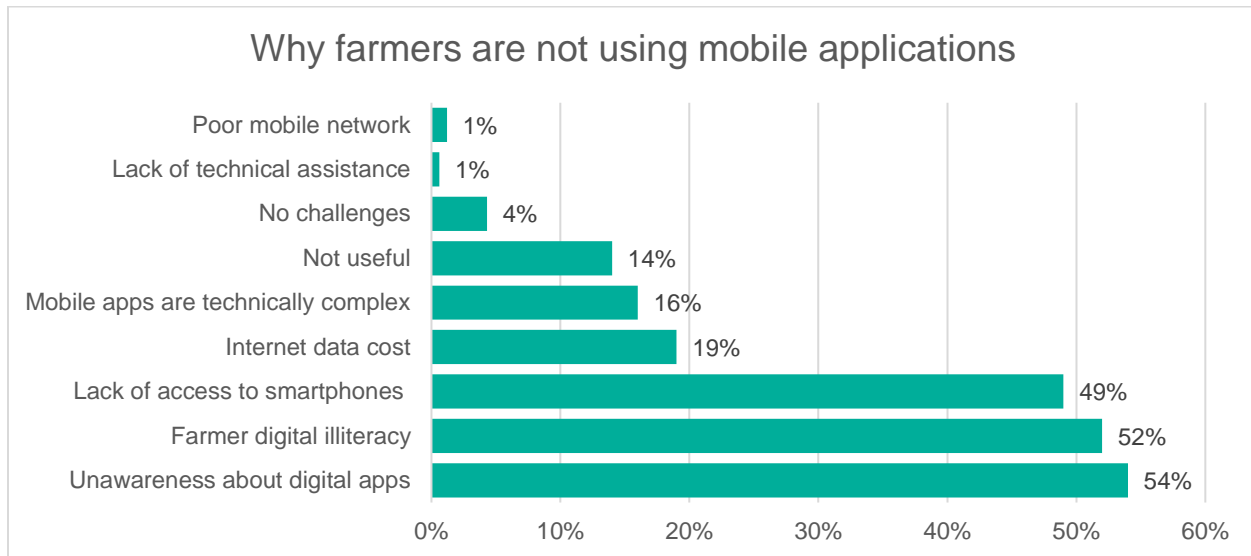


**Figure 3: Home internet and mobile data access (smallholders vs medium holders)**



In addition to these common infrastructural challenges impacting farmers access to digital tools, it is essential to recognize that they are not the only obstacles farmers face in effectively utilizing digital tools. Figure 4 below delves deeper into other challenges confronting farmers in their adoption and utilization of digital tools. The majority of the sampled farmers cited that the main obstacle is simply the lack of awareness about the different existing digital applications (54 percent) and a similar majority (52 percent) reported that general digital literacy is a key challenge. Further, the lack of access to smartphones was reemphasized as a common challenge, with at least half of the farmers sampled (49 percent) identifying it as a key obstacle. The high cost of internet (19 percent), the complexity of mobile applications (16 percent), and lack of usefulness of mobile applications (14 percent) were among the other factors reported to be reasons why farmers are not using digital applications.

**Figure 4: Major challenges: why farmers are not using mobile applications.**



These findings provided a clear motivation for the capacity building, training and promotional activities catered to boost the use and adoption of Mahsoly to smallholders and hence enhance farmers' access to and understanding of its services and features.

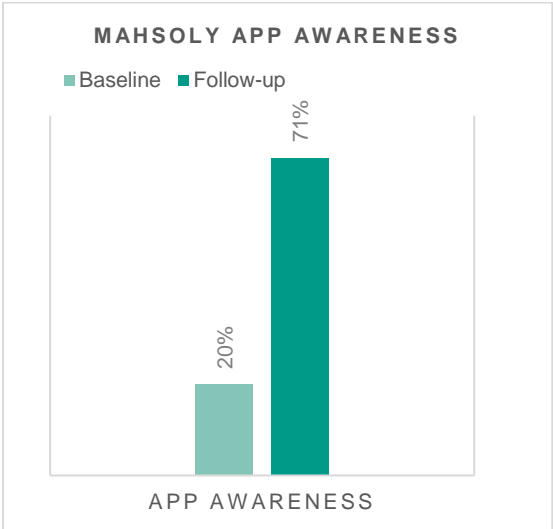
The digital literacy training that was later introduced was built on the model of Training of Trainees (TOT) through which digital application developers (Mahsoly App developers) trained local trainees first and then these local trainees passed on and delivered this training to farmers in Minya and Benisuef. The next section will provide an overview of the follow-up survey findings, that was conducted post the dissemination of farmer trainings to promote the Mahsoly mobile application. To assess the impact of these trainings, the next section will summarize key insights on different outcomes of interest: awareness, downloads, and interest in the Mahsoly mobile application services, including the new price monitoring tool.

## Key Insights from Follow-up Survey

### *Awareness of Maholsy*

To assess the impact of the interventions on farmer awareness of digital agricultural tools, respondents were asked to report if they have heard about Mahsoly in a baseline survey (before they receive any digital literacy training), and in a follow-up survey (after they receive digital literacy training). The data from Figure 5 reveals that approximately 80 percent of the surveyed farmers have heard of the Mahsoly application compared with only 20 percent at baseline. This suggests that the capacity-building efforts and word-of-mouth have been effective in disseminating information about Mahsoly. The notable increase is likely also owing to the communal nature of farmers belonging to the same farmer organization, whereby news about new innovations tend to easily spread in farmer communities of Menya and Benisuef. The high awareness level suggest that trainings are impactful in promoting Mahsoly and similar digital tools to smallholders.

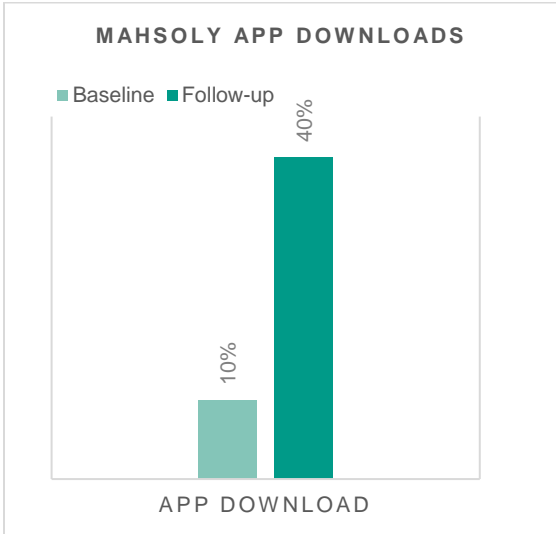
**Figure 5: Farmer reported knowledge about Mahsoly Mobile Application**



***Uptake of Maholsy***

Furthermore, to assess the impact of the interventions on farmer uptake of digital agricultural tools, respondents were asked to report if they downloaded Mahsoly or other agricultural digital apps. Through comparing the self-reported downloads of Mahsoly, Figure 6 below shows that approximately 38 percent of farmers have downloaded the Mahsoly mobile application to access agricultural advisory services while only 10 percent reported to have downloaded it before any training intervention. This is not surprising given that the farmer trainings encouraged farmers to learn and ask questions about the different mobile app features, and trainers supported farmers who were interested in downloading the apps.

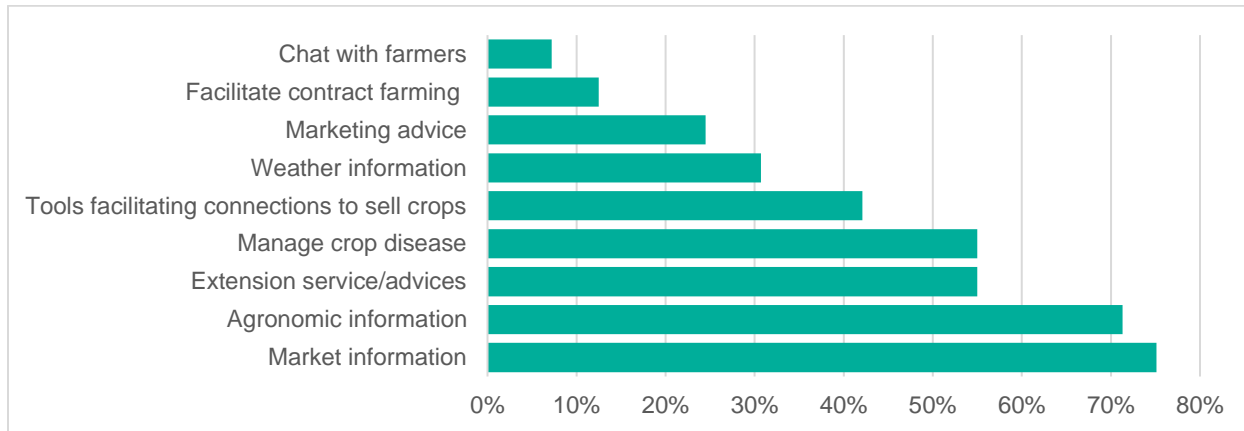
**Figure 6: Farmer reported downloads of Mahsoly Mobile Application**



## Introducing a Demand-driven Tool: The Price Monitoring Tool

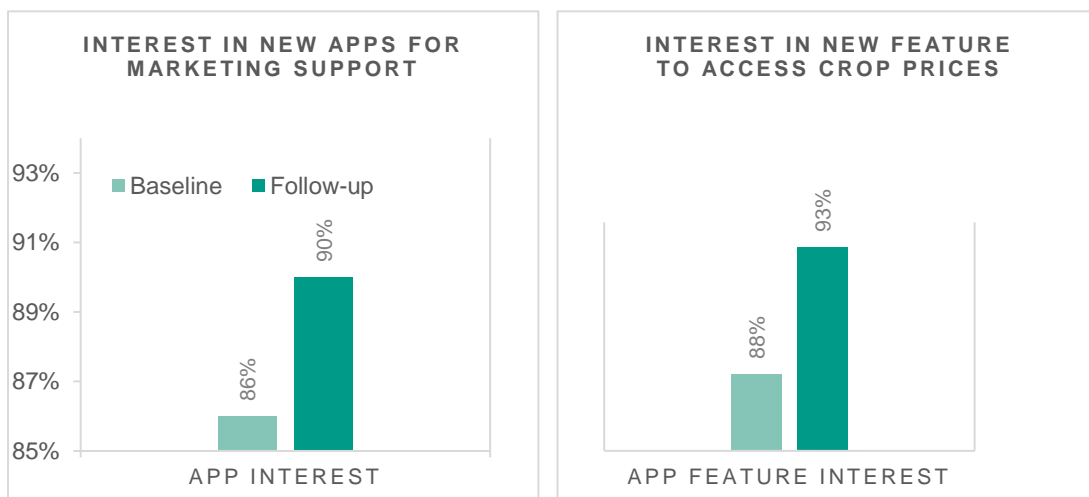
At baseline, farmers were asked to report on the type of services they wish to be offered through digital services. The majority (75 percent) of farmers highlighted access to market and price information as their preference.

**Figure 7: farmer preferred services to be offered through a digital application**



Similarly, when farmers were directly asked “Are you interested in a new digital app that provides agriculture and marketing support?” Figure 8 below illustrates that farmer interest in a new digital application that provides agricultural, and marketing support was high at baseline (86 percent), and yet still increased by another 4% post the interventions (90 percent). More specifically, when farmers were asked to report their interest in a feature that can provide timely crop price information, the majority of our sampled farmers (approximately 93 percent post the interventions) reported their interest. This indicates a strong demand for a digital tool that can enhance farmer access to market and price information.

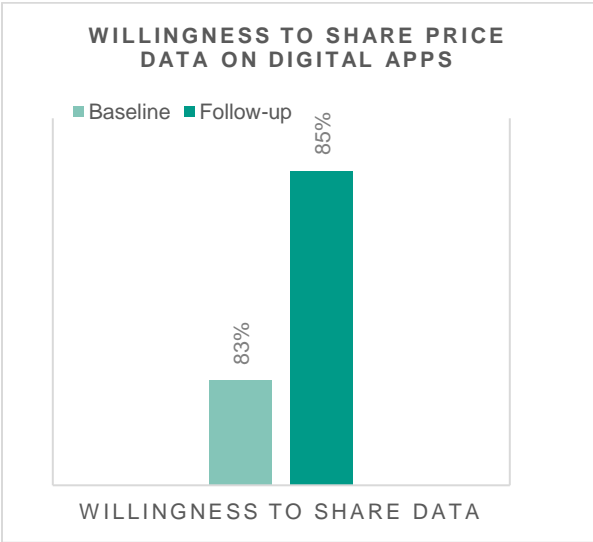
**Figure 8: farmer interest in a new digital app that provides marketing support / a new feature that provides crop prices**



This high level of interest reflects the significant value farmers place on having access to current market prices, which can support farmers in making informed decisions when pricing their crops and related marketing activities. The data provides evidence that the development of the new price monitoring tool was demand-driven with the objective of ensuring equal access to price information, empowering small-holders to sell at fair market prices and enhance their incomes.

Moving beyond farmer interest, it was important to assess farmer willingness to submit and share price information through mobile applications, Figure 9 below reveals that the majority (approximately 85 per cent) of surveyed farmers post the trainings were willing to submit prices of crops they have sold through a mobile app. Farmer willingness to submit and share price data with their peers across digital platforms, reflects farmer trust in digital services and provides an opportunity to scale up the price monitoring tool and similar services to farmers. Indeed, as soon as the price monitoring tool becomes widely available and utilized by a larger audience of farmers, the increase in the number of self-reported price data will enhance price data accuracy and validity.

**Figure 9: Farmer willingness to share and submit prices over a digital platform**

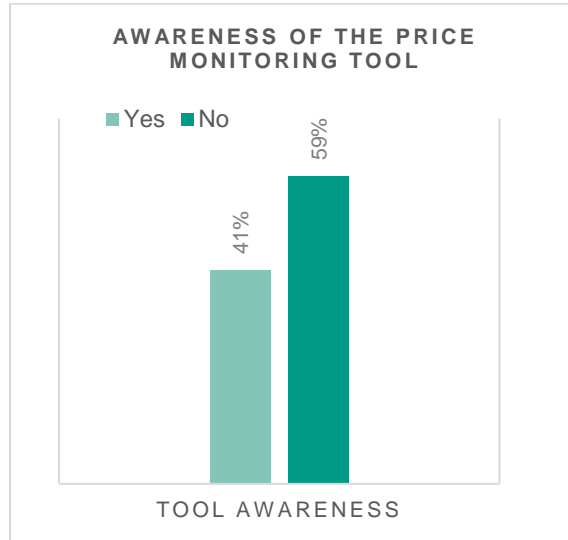


As explained earlier, the demand-driven tool was promoted through a series of promotional activities and targeted farmer training interventions conducted through farmer organizations, consequently the new feature was well promoted within the farmer organizations of Minya and Benisuef in a very short time. The following sections will detail how these efforts have likely impacted awareness and uptake of the price monitoring tool.

***Awareness of Mahsoly's new price monitoring tool:***

When farmers were asked if they heard about the new price monitoring tool, Figure 10 shows that 41 percent of the surveyed farmers are aware of the new price monitoring tool. While the tool was only officially launched in July 2024, the relatively high percentage of farmers who became aware of the new price monitoring tool suggests that the training and promotional activities conducted by Mahsoly have been effective in promoting the new service to farmers in a relatively short period of time. This spike in awareness sets a promising base for further trainings to promote the new tool's wide use.

**Figure 10: Farmer reported knowledge about the new Price Monitoring Tool**



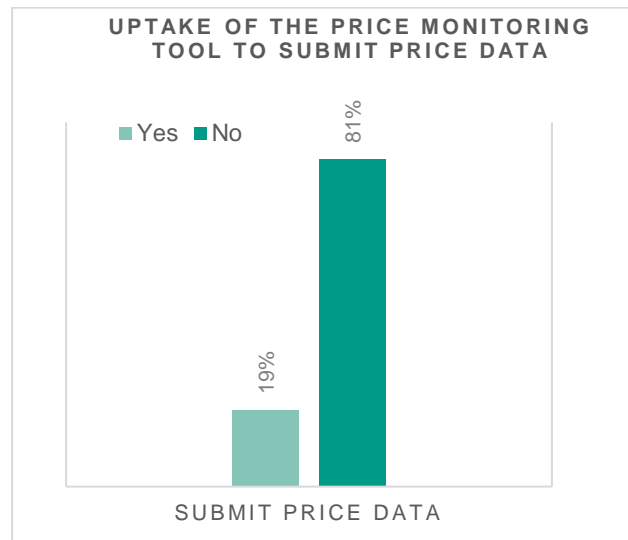
***Uptake and utilization of Mahsoly's new price monitoring tool:***

Beyond awareness, we wanted to inspect whether farmers actually started using the tool. Figure 11 below indicates that approximately 38% of the surveyed farmers have tried navigating the new feature to access crop price data. This suggests that a significant number of farmers who became aware of the feature have at least engaged with it, demonstrating a significant positive initial adoption effect.

### Figure 11: Farmer reported usage of the new price monitoring tool to access price data

Further analyzing adoption effects, we asked farmers if they actually tried submitting price data through the new tool. Survey findings reveal that approximately 19 percent from the sample of farmers who reported to have used the price monitoring feature to access price data, submitted their crop price data through the tool to earn points. Indeed, with more marketing, promotional and training efforts, there is room to nudge more farmers to better utilize the new service.

### Figure 12: Farmer reported usage of the new price monitoring tool to submit price data



## User Feedback on the New Price Monitoring Tool: A Qualitative Review

Below is a summary of farmer responses to a list of open-ended questions in the survey, to document farmer user experience and feedback on the new price monitoring tool.

### Key benefits

- ▶ **Enhanced access to price data:** The most frequently mentioned benefit of the tool is its ability to provide real-time crop price information at the farm-gate level. Particularly, 88 percent of farmers reported that they find it useful to have access to a tool that allows them to mutually share crop sales prices with one another. Farmers mentioned that they find the service valuable in supporting their negotiation efforts with traders, ensuring stronger bargaining powers and better profits. Farmers highlighted that the access to up-to-date price data helps them set competitive prices and optimize their sales strategies.
- ▶ **Enhancing informed decision making:** Farmers mentioned that the tool empowers them to make decisions based on current market conditions rather than relying solely on trader-based information. Many respondents appreciated this feature for its role in helping them understand market trends and explained that it would allow them to make informed decisions about the sales of their harvested produce.

## *Challenges and Limitations*

- ▶ **Infrastructural Issues:** Lack of access to smartphones or poor access to internet were among the challenges highlighted that hinders some users from fully utilizing the tool's features.

## *Outlook and way forward*

- ▶ **Training and Awareness:** Digital literacy is one key challenge, farmer capacity to navigate a smartphone and download and use digital apps for agriculture purposes is variant and requires targeted training and support. The feedback also indicates that many users are not yet fully aware of how to navigate the new price monitoring tool and utilize it for farm and marketing purposes. Disseminating video tutorials and providing more targeted training sessions through farmer organizations and support from partner organizations can help bridge address these challenges.

## **Conclusion**

The collaboration between the Ministry of Agriculture and Land Reclamation (MALR), USAID, and the International Food Policy Research Institute (IFPRI) has successfully introduced the Mahsoly price monitoring tool, marking a significant advancement in Egypt's digital agriculture landscape. Launched in June 2024, this tool aims to provide Egyptian farmers, with real-time market data to improve their access to price information and enhance their market engagement. This initiative aligns with MALR's efforts to digitize the agriculture sector and foster the use of digital tools to address key challenges of smallholder farmers in Egypt. By building partnerships with the private sector, such as Mahsoly, MALR reflects its commitment to promote digital innovation in Egypt's agriculture sector.

The Mahsoly application currently serves 200,000+ farmers across Egypt, and the new price monitoring feature is expected to significantly enhance the application's popularity and exposure. By bridging a common challenge that smallholder farmers in developing countries face: timely access to price information at the farm gate level, this tool is likely to be widely used in the years to come.

The survey conducted by IFPRI (and funded by USAID) aimed at assessing the potential impact of targeted trainings and how powerful can the marketing and the promotional efforts conducted by the owners of the digital apps be (such as Mahsoly). The findings reveal that training interventions are effective instruments to increase awareness, uptake and utilization of digital tools, like Mahsoly, to smallholder farmers. The follow-up survey data highlights substantial farmer interest in the new price monitoring tool. Farmer willingness to trust digital platforms and submit prices highlights that if the tool became well adopted, it can likely have pronounced impacts on long run farmer marketing and commercialization activities.

As soon as this tool becomes widely available and is utilized by a wider audience of farmers, we anticipate a substantial increase in the volume of self-reported price data. This influx of data will significantly enhance the accuracy and validity of the price information provided by the tool, as it will be based on a more comprehensive and representative sample of farmers. Our objective is to ensure that the new price monitoring tool of Mahsoly becomes the go-to resource for farmers in Egypt who aim to access timely and accurate price information on their agricultural products during any business transaction they conduct.

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# Appendix 1

## Mahsoly Price Monitoring Tool

How to share your Price and win Points?

1 Price  
2 Quantity  
3 Selling date  
4 Classification  
5 Target Market

SHARE PRICE DATA:

1  
2  
3  
4  
5

10

18.25 E£ / KG

22.00 E£ / KG

7.5 E£ / KG

12.2  
20.0  
14.8  
12.5  
10.5  
22.6  
18.9  
19.0

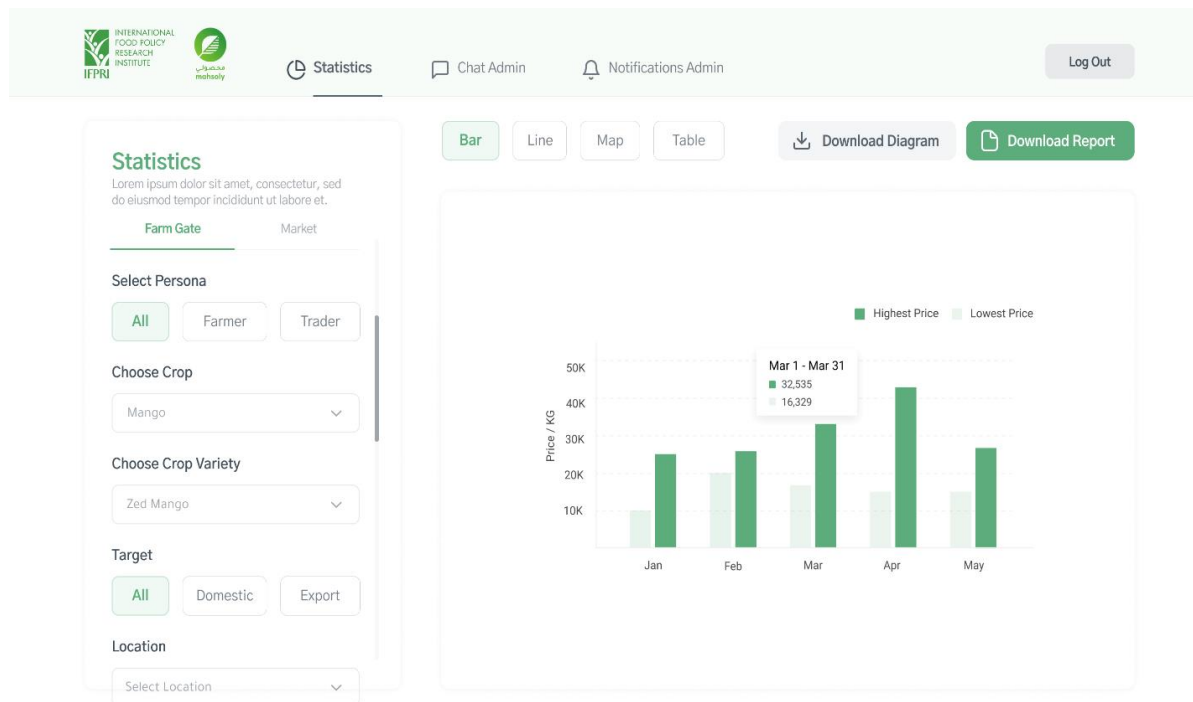
محصولي mahsoly

# Your Price, Your Call

GET IT ON Google Play

This service is provided by International Food policy Research Institute IFPRI

# Mahsoly Back-end Researchers Portal



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