

How High to Raise the Bar? The Causal Effect of Self-Set Goals*

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Abstract

We investigate the effect of self-set goals among decentralized agents. We elicited productivity goals from a sample of 10,187 volunteer agricultural extension workers in Rwanda and exogenously varied the salience of goals through reminders. We find that goal reminders increase a performance index by 0.08 standard deviations when they are sent on time. Comparing treatment effects by goal ambition quartiles, we find that the relationship between goal magnitude and effectiveness of goal reminders follows an inverted U-shape. Our findings align with existing observational evidence and underscores the effectiveness of setting goals that are both ambitious and realistic.

Keywords: Goal setting, agriculture, digital technology, extension workers

JEL Classification: D91, J22, O12, O13, Q16.

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1 Introduction

Goal setting has been shown to improve outcomes across a range of settings including workplaces, schools, personal health, and finances.¹ To test what types of goals are most effective, studies typically assign goals of different magnitude and compare outcomes. The main insight emerging from this literature is that goals are most effective if they are ambitious but attainable (see [Locke and Latham \(2002\)](#) for a review). However, in many settings exogenously assigning goals is either not feasible because there is not principal t (e.g., setting exercising goals for oneself) or not advisable because principals such as work supervisors lack the necessary information to determine appropriate goals ([Goerg, 2015](#)). In these situations, self-set goals are more relevant and appropriate. Yet, we know little about what type of self-set goals are most effective.

The role of goal magnitude may depend on who sets the goal. For example, while overly ambitious goals could have an adverse effect when they are exogenously assigned, they could be effective when set by agents themselves, as they are less likely to be perceived as threatening ([Drach-Zahavy and Erez, 2002](#)) or may leverage positive effects of adopting a growth mindset ([Dweck, 2006](#)). The fundamental challenge in identifying the causal effect of goal magnitude for self-set goals lies in distinguishing whether effective goals make agents more productive or whether more productive agents adopt effective goals. To draw a comparison from the world of sports: it is unclear whether good athletes know how high to raise the bar or whether raising the bar to the right level makes them jump higher. This distinction matters, in part because it affects whether principals should nudge agents to set different goals for themselves or not.

In this study, we examine the effect of increasing the salience of self-set goals through SMS reminders in a sample of over 10,000 agricultural extension workers, called farmer promoters (FP), in Rwanda. We employ a novel strategy to identify the causal relationship between goal magnitude and performance by first eliciting goals for three key performance outcomes in a non-conspicuous way for *all* extension workers as part of a baseline survey. These outcomes include the number of farmers to register into a subsidized input scheme, the number of farmers to train on new agricultural practices, and the number of training ses-

¹The impact of goal settings are demonstrated in employment ([Latham, 2012](#); [Goerg, 2015](#); [Teo and Low, 2016](#)), education ([Dobronyi et al., 2017](#); [van Lent, 2019](#); [Islam et al., 2022](#)), health ([Marc A. Adams and Angadi, 2017](#)), resource conservation ([Löschel et al., 2023](#)), and finance ([Grohmann et al., 2020](#)).

sions at the demonstration plot to hold. Subsequently, we increase the salience of these goals for randomly selected farmer promoters through reminders. Comparing the performance of farmer promoters with the same goal ambition level across control and treatment groups, we estimate the effect of goal magnitude while holding the agent type constant.

Our setting is an example of an environment where it is difficult for principals to assign goals. Extension workers are members of the community they serve. Their main duties include helping farmers with improved agricultural practices and inputs and supporting agricultural campaigns. Their familiarity with local farmers provides them a clear information advantage over principals, potentially enabling them to select more appropriate goals. In addition, principals lack monitoring and sanctioning mechanisms, and therefore face challenges to effectively incentivizing agents' performance. These features, which are commonly shared in decentralized systems, make self-set goals an appealing motivating strategy.

In the pooled sample, the effect of reminders is small (0.03 standard deviations) and insignificant: we find that this is explained by the variation in the timing of task completion among farmer promoters. Our analysis exploits an endogenous variation in the timing of goal reminders. Due to logistical challenges, about half of farmer promoters in the treatment group received the goal reminders after having completed all or most of their work. We find positive effects of increasing the salience of self-set goals on all three performance outcomes when goal reminders are sent to farmer promoters on time. The average intent-to-treat effects are of a moderate size at approximately 0.08 standard deviations for an overall performance index. By contrast, the effects of goal reminders sent late are close to zero and statistically insignificant.

One important concern for goal setting interventions is that agents may narrowly focus on achieving quantity targets, at the cost of compromising the quality of their work or performance of non-targeted tasks (Holmstrom and Milgrom, 1991). To test for the importance of these unintended consequences, we examine data collected during field visits on how farmer promoters maintained their demonstration plots and administrative records of their performance on tasks for which no goals were set. We find that neither the quality of demonstration plots nor performance on other tasks differ between treatment and control groups. A related concern is that farmer promoters may misreport their performance to meet their goals. Using a social desirability measure collected at baseline, we show that the

positive goal reminder effects on self-reported outcomes are consistent regardless of farmer promoters' social desirability scores, assuaging concerns about differential reporting bias.

Importantly, our analysis suggests that goal reminders are most effective for farmer promoters who set ambitious but realistic goals. We measure goal ambition by taking the goal magnitude set at baseline as a proportion of last year's performance. To examine the relationship between goal ambition and the effectiveness of goal reminders, we compare treatment effect sizes across goal ambition quartiles. We find insignificant, negative effects of goal reminders among farmer promoters in the first quartile, who set goals at or below last year's performance. Effect sizes peak around the third quartile, where farmer promoters set the goal at approximately 30% to 80% above last year's performance. In contrast, reminding farmer promoters in the fourth quartile with overly ambitious goals that are, on average, more than twice as large as last year's performance shows no significant impact. Overall, these results align with findings from the literature on externally set goals, indicating an inverted U-shaped relationship between goal magnitude and performance.

To understand the mechanism of these treatment effects, we collect rich data on farmer promoters' personality traits and their susceptibility to persuasive strategies (STPS). These can be linked to mechanisms for goal effectiveness posited in the literature, including that goals may increase commitment towards the goal (Heath et al., 1999), foster accountability towards external agents (Travers et al., 2015), or encourage better organization (Webb et al., 2007). Our heterogeneity analysis shows that the effect of goal reminders does not differ by farmer promoters' susceptibility to be convinced by commitments they made, requests made by authorities, or their conscientiousness level. We note, however, that these results are only suggestive as these traits may be correlated with other characteristics of farmer promoters that affect their performance.

Lastly, we explore practical implications for goal setting interventions. We first investigate which types of agents set more effective goals for themselves - which we define by goals in the second or the third ambition quartile - and how well one can identify these agents with available data. We find that completing primary education is strongly correlated with the likelihood of setting an effective goal in an OLS model, but basic demographic characteristics and personality traits overall do not explain much of the variation in whether a farmer sets an effective goal or not. In addition, the machine learning analysis, estimating a random

forest model, shows low accuracy, indicating the difficulty of predicting which farmer promoters set effective goals using observable characteristics.

Second, we explore whether agents can be nudged to adopt more effective goals using the experimental variation that influenced the goal magnitudes set by farmer promoters. Specifically, in an attempt to nudge agents to set more realistic goals, we asked a randomly selected subset of farmer promoters first about their last year’s performance before eliciting their goals. This question order lowers the goal magnitude (in terms of the number of farmers registered into the input subsidy scheme) by 4% and decreases the likelihood of setting the effective goal by 7.2 percentage points. Using the random ordering of questions as an instrument, we estimate how setting an effective goal affects performance: our second-stage estimates are positive, indicating the possibility that nudging farmer promoters to set more effective goals could improve performance, but the estimates are imprecise. This is a productive area for future research.

This paper makes contributions to several strands of literature. First, our findings contribute to the literature on goal setting, offering insights on the important role of goal magnitude in the effectiveness of self-set goals. Because of our sample size, which is an order of magnitude larger than most studies in this literature, and our novel design, our study causally identify what type of self-set goals are most effective. Moreover, the heterogeneity in effectiveness across different goal magnitudes can help explain mixed findings on the effectiveness of goal setting across recent studies. For example, a recent large scale RCT with Tanzanian students finds that self-set goals are ineffective in increasing learning outcomes (Islam et al., 2022). This finding contrasts with the positive effects on learning outcomes shown in various experimental studies of goal settings involving students in higher-income settings (e.g., Morisano et al. (2010)). One possible explanation for this discrepancy is that a much larger share of students in the Tanzanian study set unrealistically high goals. Our study demonstrates that such overly ambitious goals tend to be ineffective.

Lastly, our findings expand the evidence on the impact of digital nudges and reminders. Studies have shown that information services and nudges via mobile phones influence individual’s behavior in various contexts, including agriculture (Fabregas et al., 2022), finance (Karlan et al., 2016), education (Castleman and Page, 2016), and health (Kaptein et al., 2012). In other contexts, however, text-message reminders have been found to have limited

impact, for example, on questionnaire response rates (Keding et al., 2016), court appearance (Cumberbatch and Barnes, 2018), attendance at outpatient appointments (Youssef et al., 2014), or uptake of cancer screening programs (Hirst et al., 2017), highlighting that the effectiveness depends on the context, design, and content of the messages. Our study demonstrates that, in the context of government extension work, a few well-targeted messages improve performance of hard-to-monitor, decentralized public-sector agents.

The remainder of this paper is organized as follows. Section 2 provides context details of the experiment subjects. Section 3 describes the setup of the experiment. Section 4 presents the data and empirical strategy adopted. Section 5 illustrates the findings of the experiment. Section 6 discusses its policy relevance. We conclude in Section 7.

2 Background

The Rwanda Agriculture and Animal Resources Development Board (RAB) uses a network of approximately 14,500 village-level volunteer agricultural extension workers, called farmer promoters, to promote the adoption of recommended farming inputs and practices. Farmer promoters are resident farmers who are elected by other farmers in the village. They report to Socio-Economic Development Officers (SEDOs), who are paid government employees that coordinate and monitor the work of all farmer promoters in their area.²

Farmer promoters support government agricultural campaigns throughout the year. One of their key responsibilities is to maintain demonstration plots and train farmers on modern inputs and recommended agricultural practices, such as the appropriate use of fertilizer and spacing of planting. Farmer promoters also assist in a range of seasonal campaigns. For example, during the national input subsidy campaign before the start of the main agricultural season, they help farmers to digitally register for the subsidy scheme and purchase subsidized inputs. During the agroforestry campaign, they mobilize farmers to pick up trees on the distribution days and train farmers on how to plant and care for trees. In this study, we focus on three performance outcomes between two of farmer promoter' main activities - the subsidized input promotion campaign and the farmer training via demonstration plots.

Farmer promoters do not receive monetary compensation but receive training and in-

²Each SEDO usually works with one cell, an administrative jurisdiction consisting of three to ten villages.

kind benefits, such as free inputs and farming tools to be used for their demonstration plots and bicycles for transportation. There is no explicit opportunity for career promotion within the public extension system. Intrinsic motivation therefore plays an important role in their decision to become a farmer promoter. During the baseline survey, 76% of farmer promoters identified “helping others and having a positive impact on the community” as the most important reason for becoming a farmer promoter, while only 20% chose “gaining knowledge and experience and advancing my career” and very few selected “improving social status” or “earning benefits”. On average, farmer promoters spend six hours per week, delivering agricultural extension in this role.

3 Experimental Design

3.1 Study Sample

We recruited farmer promoters for this study by phone between June to August 2021, using One Acre Fund (1AF)’s farmer promoter database which included 12,638 out of some 14,500 farmer promoters in Rwanda.³ Farmer promoters were informed that RAB was conducting a survey to better understand their motivation and personality for the purpose of providing better training and support services in the future. This phone recruitment resulted in our final study sample of 10,187 farmers promoters (or 70% of nationwide farmer promoters) who completed the baseline survey and consented to receive Short Messaging Service (SMS) messages.

Table 1 Column 1 summarizes the demographics characteristics of our study sample. On average, farmer promoters are 47 years old, have served in this role for almost 7 years, and have lived in their village for 35 years. 78% of farmer promoters are male and a large majority (85%) have completed primary education. Almost all (95%) were elected to their position rather than being appointed by a government official.

³One Acre Fund is a partner organization of this study and has implemented the intervention and conducted the data collection.

Table 1: Descriptive Statistics and Randomization Balance

Variable	(1) Total		(2) No Reminder		(3) Goal Reminder		(3)-(2) Pairwise t-test	
	N	Mean/(SD)	N	Mean/(SD)	N	Mean/(SD)	N	Mean difference
Age	10181	47.082 (10.018)	5088	47.145 (9.975)	5093	47.018 (10.062)	10181	-0.127
Male	10187	0.777 (0.416)	5093	0.783 (0.412)	5094	0.771 (0.420)	10187	-0.012
Completed primary education	10187	0.846 (0.361)	5093	0.847 (0.360)	5094	0.846 (0.361)	10187	-0.001
FP elected	10187	0.950 (0.218)	5093	0.948 (0.223)	5094	0.952 (0.213)	10187	0.005
Experience as FP (yr)	10187	6.649 (3.571)	5093	6.674 (3.585)	5094	6.624 (3.557)	10187	-0.050
Live in village (yr)	10187	34.790 (17.300)	5093	34.989 (17.257)	5094	34.590 (17.343)	10187	-0.399
Reciprocity score (STPS)	10187	0.000 (1.000)	5093	0.009 (0.993)	5094	-0.009 (1.007)	10187	-0.017
Scarcity score (STPS)	10187	-0.000 (1.000)	5093	-0.006 (1.016)	5094	0.006 (0.984)	10187	0.012
Authority score (STPS)	10187	-0.000 (1.000)	5093	0.009 (0.989)	5094	-0.009 (1.011)	10187	-0.018
Commitment score (STPS)	10187	0.000 (1.000)	5093	-0.008 (1.021)	5094	0.008 (0.979)	10187	0.017
Consensus score (STPS)	10187	0.000 (1.000)	5093	-0.002 (0.994)	5094	0.002 (1.006)	10187	0.004
Liking score (STPS)	10187	-0.000 (1.000)	5093	0.007 (0.995)	5094	-0.007 (1.005)	10187	-0.015
Extraversion score (Big 5)	10187	0.000 (1.000)	5093	0.004 (1.007)	5094	-0.004 (0.993)	10187	-0.007
Agreeableness score (Big 5)	10187	0.000 (1.000)	5093	0.002 (1.009)	5094	-0.002 (0.991)	10187	-0.004
Neuroticism score (Big 5)	10187	0.000 (1.000)	5093	-0.012 (0.986)	5094	0.012 (1.014)	10187	0.024
Conscientiousness score (Big 5)	10187	0.000 (1.000)	5093	0.004 (1.007)	5094	-0.004 (0.993)	10187	-0.009
Openness score (Big 5)	10187	-0.000 (1.000)	5093	0.016 (0.992)	5094	-0.016 (1.007)	10187	-0.031
Social desirability score	10187	0.000 (1.000)	5093	0.004 (1.002)	5094	-0.004 (0.998)	10187	-0.008
Baseline survey version	10187	1.867 (1.037)	5093	1.866 (1.042)	5094	1.867 (1.033)	10187	0.001
Number of farmers registered	10181	103.778 (80.838)	5091	102.524 (78.428)	5090	105.032 (83.166)	10181	2.509
Number of trainings held	9967	3.589 (1.919)	4980	3.596 (1.906)	4987	3.581 (1.931)	9967	-0.015
Number of farmers trained	9918	60.132 (39.481)	4954	60.291 (39.320)	4964	59.974 (39.645)	9918	-0.317
F-test of joint significance (P-value)								0.691
F-test, number of observations								9911

Note: Data is from the baseline survey. Strata fixed effects are included in the t-tests and F-test. Standard errors are robust. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level. The baseline survey versions refer to the four versions of survey questions we used to elicit farmer promoters' goals. In all versions, we also asked farmer promoters about their previous performance in terms of absolute magnitudes. In the first and second version of the survey, we asked farmer promoters about their goals in terms of absolute magnitudes. The first version asked about goals first, while the second version asked about previous performances first. In the third and fourth version of surveys, previous performances were asked first, and then goals were asked in terms of percentage compared to the previous performance. The third version used a set of low percentage options (i.e., 5%-15%), while the fourth version used a set of high percentage options (i.e., 20%-40%). Performance variables (i.e., number of farmers registered, number of trainings held, and number of farmers trained) refer to performances in the previous year (2021).

3.2 Randomization

Figure 1 summarizes the study design and the timeline.⁴

As part of the baseline survey, we elicited individual goals from *all* farmer promoters in our sample for the upcoming season on three outcomes: the number of farmers to help register into the subsidized input scheme, the number of training meetings to hold on demonstration plots, and the number of farmers to train at the demonstration plot.⁵ For a random subset of 5,809 farmer promoters, we randomize whether we first ask respondents about their last year’s performance or first ask about their goals of the coming season.⁶ This random ordering of survey questions creates an exogenous variation in goal magnitude, which we will explore in our analysis.

After the baseline survey, 50% of farmer promoters were randomly assigned to receive goal reminders. The randomization was conducted at the individual level with stratification by the district and the quartile level of personality traits variation.⁷ Columns 2 and 3 in Table 1 report the average characteristics of farmer promoters by experimental assignment, and the last column reports the t-test of two sample means between the treatment and control groups. Baseline characteristics and baseline outcomes are well balanced between the two groups: of the 22 baseline variables we measured, no differences are statistically significant and the p-value for the test of joint significance is 0.691.

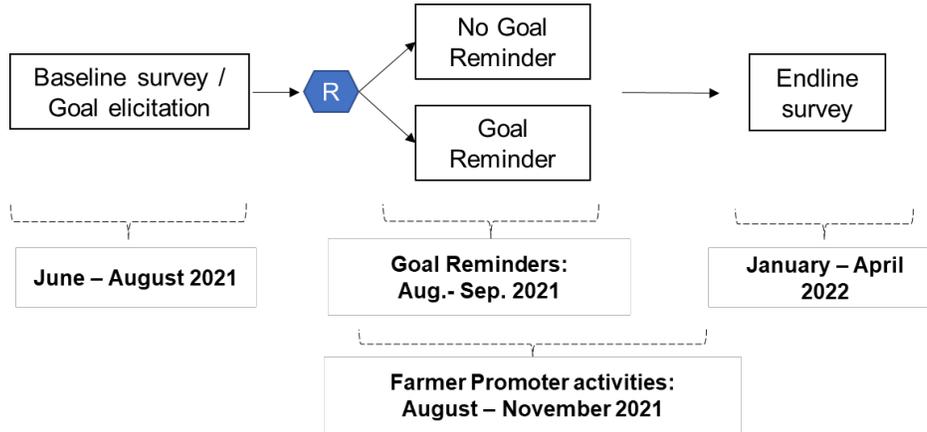
⁴The full project has a 2×2 factorial design with 2 intervention components. In addition to goal reminders, we cross-randomized whether farmer promoters receive additional motivational messages (Cialdini, 2001). The objectives of this aspect of the intervention are to examine whether motivational messages can improve farmer promoters’ performance and moreover to test whether motivational messages designed to appeal to the specific personality can lead to better farmer promoters’ performances and farmer outcomes. For this paper, we focus on the first intervention, goal reminders. While we explore the effect of the second intervention - motivational messages - in a companion paper, we control for the random assignment to motivational messages in analyses of this paper.

⁵Specifically, we ask farmer promoters: i) How many farmers do you plan to help with enrollment for subsidized inputs during the 2022A season? ii) How many meetings do you plan to hold on your demonstration plots during the 2022A season? iii) How many farmers do you plan to train on your demonstration plots during the 2022A season?

⁶The sample for this analysis is smaller because we did not start the order randomization at the start of the data collection.

⁷Stratification on personality trait was based on baseline STPS responses discussed in more detail below. We carried out the (re-)randomization 100 times and selected the one randomization that had the highest lowest p-value of the 24 balance tests checked, following the practice described in Banerjee et al. (2020). The 24 balance tests include balance checks on 4 groups of variables - a) farmer promoters’ characteristics, b) farmer promoters’ performance in the 2021A season, c) farmer promoters’ goals for the 2022A season, and d) farmer promoters’ personality trait score - over 6 experimental groups.

Figure 1: Study Design and Timeline



Note: The figure presents the timing of the study activities and their respective timing. The agricultural season (A) is from September to January.

3.3 Treatment intervention

Every farmer promoter in our treatment group received three SMS reminders in the local language, one for each of the performance goals that they set. The goal setting literature suggests that goals tend to be most effective if they are specific, measurable, achievable, relevant, and time-bound (SMART) (Doran et al., 1981). We hence designed the reminder messages to refer to individual farmer promoter’s specific self-set goals from the baseline survey, which needed to be achieved by the end of the planting season. An example of the goal reminder messages is as follows: “Remember you said your goal for this season was to help XXX farmers register for subsidized inputs! Keep up with your goal!”⁸

Goal reminder messages were sent in August and September 2021 following the order of their respective activities.⁹ Reminder messages were designed to be delivered before farmer promoters completed their work for each campaign. However, due to logistical hurdles, messages were sent with a delay.¹⁰ To assess the extent of the delay in message delivery for individual farmer promoter, we asked farmer promoters in the endline survey when they conducted their goal-related activities.¹¹ Table C2 compares the delivery time of goal re-

⁸The full set of reminder messages are listed in Appendix A.

⁹We use administrative data to verify that messages were delivered successfully.

¹⁰Messages were sent to all treatment farmers at the same time within the common time window under which the targeted activities were expected to take place.

¹¹For example, we asked farmer promoters: “When did you do the majority of your work helping farmers register for subsidized inputs during the 2022A season? Please include the month and times of the month

minder messages and the time that farmer promoters conducted the majority of their work. We find that about half of farmer promoters had already completed most or all of their activities when they received the goal reminders (Table C3 Column 3).

We thus estimate the effect of goal reminders both for the full sample and separately for farmer promoters that received messages on time or late. We identify farmer promoters that conducted all of their specific goal-related work after receiving the first reminder message of that goal (we refer to this sub-sample as the “on-time” sample) and the remaining farmer promoters who conducted at least some of the work before they received the first reminder message (the “delayed” sample). We highlight two caveats for this analysis. First, Table C4 shows that the timing of task completion is correlated with farmer promoter’s characteristics. We thus cannot distinguish whether any difference in the effects of goal reminders between these two sub-samples is due to the timing of their work or due to other factors correlated with the timing. Second, since the randomization was not stratified by the timing of work completion, characteristics of farmer promoters *within* the “on-time” and “delayed” sub-samples may differ by treatment assignment, which would compromise the internal validity of our results. While we do not find significant imbalance in observed baseline characteristics between the treatment and control groups within the on-time sub-sample (Table C5) and delayed sub-samples (Table C6), we cannot rule out the chance that unobserved differences affect our treatment impact estimates within sub-samples.¹²

4 Data Collection and Empirical Strategy

4.1 Data collection

We utilize four datasets for our analysis: two phone surveys administered before and around seven months after the intervention, field visit data for a sub-set of farmer promoters, and administrative records with additional information on farmers promoters’ performance.

(early, middle, or late).”

¹²A related potential concern is that the reminders themselves changed the timing of when people completed work. We do not find that there are systematic differences in timing by treatment assignment across our three tasks (Table C3). However, there is a small difference for the registration of farmers task that we will discuss in the interpretation of our results.

4.1.1 Baseline Survey

In the baseline survey, we collected data on farmer promoters’ demographic characteristics, their experience and last year’s performance as farmer promoters, and their performance goals for the coming season, as explained in Section 3. We also gathered data on farmer promoters’ psychometric characteristics. Specifically, we designed 27 questions that aim to measure the six traits of Susceptibility to Persuasive Strategies (STPS), drawing on the seminal work by Cialdini (2001). The six traits measured were susceptibility to persuasion by authority, commitment, scarcity, reciprocity, consensus, and liking. In addition, we used an abbreviated version of test to measure the Big Five personality traits (Big Five Inventory-10), two questions per trait - extraversion, agreeableness, neuroticism, conscientiousness, and openness (Rammstedt and John, 2007).¹³ The descriptive statistics on the standardized psychometric measurements are shown in Table 1.

To address concerns about social desirability bias in self-reported responses, we utilize the Marlowe-Crowne social desirability scale (Crowne and Marlowe, 1960) and included a subset of 5 questions (out of 33 questions in the original scale) in our baseline survey, to measure farmer promoters’ self-evaluation of positive behaviors, such as being intrinsically motivated for work and doing favors for others. Farmer promoters who report consistently acting in these ways are considered to have a higher possibility of providing socially desirable responses to surveys.

4.1.2 Endline Survey

Of the 10,187 participants in our study sample, surveyors administered an endline survey with 9,615 farmer promoters in February to April 2022, translating to a low attrition rate of 5.6%. Table C1 shows that attrition rates are almost identical for treatment and control groups.

The endline survey collected performance data which we use as our main outcomes. As specified in the pre-analysis plan, our main outcomes correspond to the three performance goals we elicited and an aggregate performance index. For the subsidized inputs campaign, the outcome is the numbers of farmers that farmer promoters helped with the registration of subsidized inputs. For the demonstration plots and farmers training campaign, we measure

¹³For psychometric measurements, some questions were written as *reverse scoring* questions to reduce response bias.

the number of training sessions that farmer promoters have held on their demonstration plot and the number of farmers that they have trained on their demonstration plot. Because of the noise in self-reported measures, we winsorize outcome variables at the 99 percentile in our main specification. To increase the precision and address concerns about multiple hypotheses testing, we also construct a standardized summary index using these three outcomes following [Kling et al. \(2007\)](#).

4.1.3 Field Visit and Administrative Data

We complement self-reported data with observational data from field visits and administrative records. Specifically, for a subset of farmer promoters (2,403), their supervisors (SEDOs) visited their demonstration plots and collected data on the quality of those plots and whether farmer promoters followed guidelines.¹⁴ Also, for the agroforestry campaign, information on the number of farmers who picked up and planted trees were recorded.¹⁵ We use those supplementary data to examine implications for multi-tasking by testing the treatment effects on the quality of farmer promoters’ work and their performance on tasks for which no goal was set.

4.2 Empirical Strategy

To examine the effect of goal reminders, we estimate the following main specification:

$$y_i = \beta_0 + \beta_1 \text{Reminder}_i + \beta_2 X_i + \lambda_l + \epsilon_i. \tag{1}$$

Our coefficient of interest β_1 measures the intention-to-treat effect of receiving a goal reminder on outcomes y_i for farmer promoter i . To increase the precision of our estimates, we control for covariates X_i , which is a vector of farmer promoters’ characteristics measured at baseline as listed in [Table 1](#), and strata fixed effects λ_l . We report robust standard errors.

¹⁴SEDOs observed and recorded a set of features of the plot and practices adopted on the plot, ranging between 9 and 45 features and practices depending on the number of crops were grown. For example, is the demonstration plot located in an accessible land, and what is the inter-lines spacing used for maize? The quality outcome variable is constructed as the average score across those observations.

¹⁵There are two subprograms under this agroforestry tree campaign. One is called the individual land planting program, in which farmers pick up trees from a distribution location and plant trees at locations of their own preference. The other is called the consolidated land planting program, in which farmers come to a designated government land (i.e., a site) and plant trees together. Farmers promoters are tasked to help with both programs and have received training and guidelines in advance. Administrative records on the number of trees picked up or planted and number of farmers participated were collected during the distribution days.

To conduct the heterogeneity analysis, specifically isolating the effect of goal magnitude, we estimate the following specification:

$$y_i = \beta_0 + \beta_1 Goal_i + \beta_2 Reminder_i + \beta_3 Goal_i \times Reminder_i + \beta_4 X_i + \lambda_l + \epsilon_i. \quad (2)$$

β_1 measures the effect of setting a goal with magnitude $Goal_i$. Since the goals are self-set, this estimate likely suffers from omitted variable bias. The sign of the bias is unclear as more productive farmer promoters may set higher or lower goals. By contrast, $\beta_2 + \beta_3$ measure the *causal* effect of increasing the salience of a goal with magnitude $Goal_i$ through reminders. Intuitively, since we collect goals for the entire sample, we can test the effect of increasing the salience of goals while holding constant characteristics of farmer promoters that are correlated with the type of goals they set. This allows us to estimate the effect of goal magnitude while holding agent type constant.

The literature suggests a non-linear relationship between goal magnitude and performance: we thus estimate the above relationship non-parametrically: dividing farmer promoters into goal ambition quartiles and examining the treatment impact within each quartile sample. Goal ambition is defined as the relative change in performance for the coming season, i.e., the ratio between self-set goal magnitude and self-reported performance in the previous year.

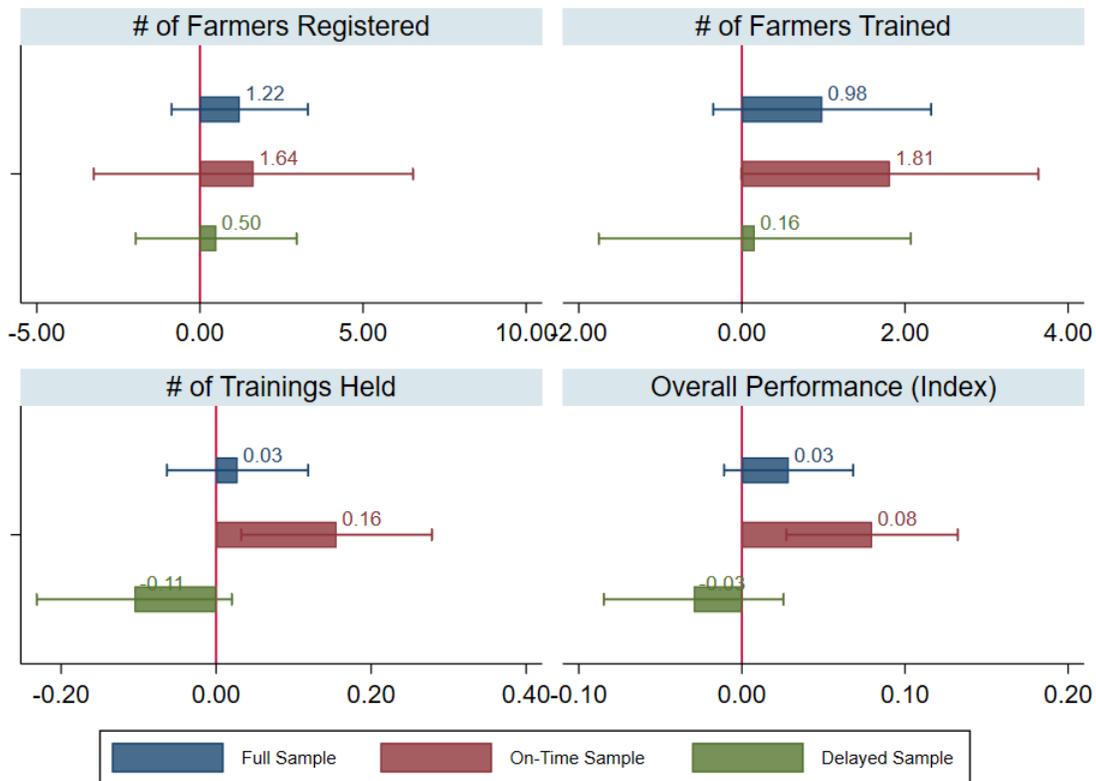
Finally, we carry out two sets of analyses to investigate effective goal-setting, which we define by whether farmer promoters' goals fall in the second or the third quartile of the goal magnitude distribution. We first examine farmer characteristics that are correlated with whether a farmer promoter sets an effective goal, using linear regressions and a random forest model. Second, as described in the Subsection 3.2, we created exogenous variation in farmer promoters' self-set goal magnitudes by randomizing whether we first asked them to recall their last year's performance before setting their goal for the upcoming season. We adopt a two-stage least-squares method to examine the impact of setting an effective goal on performance, using the assignment for survey question order as an instrument for the endogenously set goals.

5 Results

5.1 Average Effect of Goal Reminders

We start by estimating the average intent-to-treat effects of goal reminders on farmer promoters' performance. Figure 2 presents the average effects of goal reminders on the number of farmers registered for the subsidized input scheme, the number of demonstration plot trainings held, the number of farmers trained on the demonstration plots, and the standardized index across those three outcomes. For each outcome, we show treatment effects for the full sample, on-time message sample, and delayed message samples as defined earlier. Appendix Table C7 reports the corresponding regression results.

Figure 2: The Treatment Impact of Goal Reminders



Note: The figure reports the effect of goal reminders on self-reported outcomes collected in the endline survey. Outcomes are winsorized at the 99% level. For each outcome, analyses are conducted with 3 samples: full sample, on-time message sample, and delayed message sample. Bars and numbers stand for point estimates of treatment impact and capped spikes stand for the 95% confidence interval.

Focusing on the sample of farmer promoters who received messages on time (red bars in the figures and Column 2, 5, 8, 11 in Table C7), we find that the goal reminders have positive impacts on farmer promoters’ performance. The impacts for the three individual outcomes are moderate in size ranging between 2% and 4% and are statistically significant for two outcomes. The increase in the standardized index of 0.08 standard deviations is statistically significant at the 1% level. By contrast, we find that the goal reminders do not have any effect for the farmer promoters who received the delayed message.¹⁶ The observed patterns indicate that goal reminders have a positive impact on performance when farmer promoters are still working on those tasks, but once farmers promoters have decided they have completed the work, the goal reminders do not motivate farmer promoters to go back to the task and do more. The impacts of goal reminders observed with the full sample are all positive but insignificant, consistent with the pattern observed with the on-time sample. Furthermore, we do not find that the treatment impact estimates vary across participants’ social desirability score (Table C8).¹⁷

One important question in assessing the overall effects of goal-setting on performance is whether goal-setting affects behaviors not linked to the goals. The direction of these spillover effects is theoretically ambiguous. Agents may direct effort away from other activities (Holmstrom and Milgrom, 1991). Alternatively, we may observe an increased effort in other activities due to either task complementarities or an overall increase in the level of motivation. We examine farmer promoters’ performance for an agroforestry campaign which takes place in the same agricultural season but was not part of this goal setting experiment. As shown in Appendix Table C9, we do not observe that the goal reminders affect performance in the agroforestry campaign. The number of farmers mobilized for tree planting and collection is not statistically different between treatment and control groups. We further

¹⁶As we noted earlier, one import caveat of these analyses is that reminder message randomization was not explicitly stratified by the timing of farmer promoter’s undertaking their work. While the observed effects are consistent with the expected effects of reminder messages, our results do not necessarily imply that the difference in treatment effects between those two samples is due to the variation in message timing. For example, it is possible that the type of farmer promoters that start their tasks late are more responsive to reminder messages, driving the results for the on-time message sample. We further note that there is a small imbalance in the share completing the work on time for the input goal reminder (Table C3), which may help explain why we do not observe a significant treatment effect for this outcome. Last, this null result for the delayed sample further assuages concerns about surveyor demand effects as it suggests that merely receiving a goal reminder does not change self-reported outcomes.

¹⁷Specifically, we follow Dhar et al. (2022) and interact farmer promoters’ social desirability score with the goal reminder treatment. We find that social desirability is not associated with the self-reported outcome. More importantly, this pattern holds true for both the treatment and control group.

analyze the potential trade-off between quantity and quality of performance using the information on the quality of demonstration plots collected during field visits by SEDOs. We find no difference in qualitative measures on how demonstration plots were maintained between the treatment and control groups. Overall, these results suggest that improved performance resulting from goal reminders does not come at the cost of reducing farmer promoters' effort on other dimensions of their performance.

5.2 Effect of Goal Magnitude

The literature has postulated that goals are most effective if they are ambitious but attainable (Locke and Latham, 2002). One challenge with isolating the effect of goal ambition is that the magnitude of goals is highly endogenous (Falk and Knell, 2004). For example, Lee et al. (2003) show that people with low self-efficacy tend to set lower goals. It is thus unclear whether ambitious goals themselves are effective or whether the goal setting is effective for the type of person who sets ambitious goals. As discussed, we address this endogeneity problem by eliciting goals for everyone in an inconspicuous manner as part of the baseline survey and then reminding a random subset of participants of their goals. We then examine the heterogeneous effects of reminder messages by goal magnitude.

We categorize farmer promoters into four quartiles based on their level of goal ambition, measured as the change relative to last year's performance. Figure 3 plots the distribution of farmer promoters' goal ambitions for the three performance goals they set. We first focus on the two continuous outcomes: for both the numbers of farmers registered and trained we find that farmer promoters in the first quartile set goals at levels similar or below last year's performance. The second quartile of goal ambition includes reaching up to around 25-33% more farmers and the third quartile includes increasing performance by up to 70-80%. Most goals in the fourth quartile include more than doubling the performance with an average increase of more than 150%.

Figure 4 shows treatment effect sizes for each quartile using the on-time sample. We see that treatment impacts for the two continuous outcomes follow an inverted U-shape pattern with insignificant negative effects for the first quartile and a peak at the third quartile, for which the number of farmers registered and trained increase by 6.3 (7.6%) and 5 (9%), respectively.¹⁸ Table C10 reports corresponding regression results. It is notable that

¹⁸Results, available upon request, are qualitatively similar when we categorize goal ambition by percent

while these ambitious goals are most effective in increasing performance, agents still fall far short of achieving their goals.¹⁹ As a robustness check, we examine the effect of goal magnitude for the delayed sample. Similar to the average treatment impact analysis, we find neither inverted-U shape relation nor any significant treatment impact for farmer promoters who received reminder messages after completing their activities (Figure B2 and Table C11).

For the discrete outcome - the number of trainings held - we find a similar pattern for the first three quartiles. However, quartile four shows a positive (insignificant) treatment effect. One possible explanation is that farmer promoters set overall more realistic goals for this goal with quartile four starting at a performance increase of 50%.²⁰

5.3 Why Are Goal Reminders Effective?

One open question in the goal setting literature is what underlying mechanisms can explain the effectiveness (Locke and Latham, 2006). Proposed explanations include that goals foster commitments towards desired outcomes (Heath et al., 1999; Kaur et al., 2015), create accountability (Travers et al., 2015), or assist in organizing steps to achieve behavior change (Webb et al., 2007). To test the importance of these potential mechanisms, we collected data on participants' Susceptibility to Persuasive Strategies (STPS) including commitment and authority (Cialdini, 2001), and Big Five personality traits including conscientiousness, which measures people's tendency to be organized. As a test of mechanisms, we hypothesize that goal reminders have more positive effects for agents who are more susceptible to authority and consider the reminders as external monitoring, for agents who are more influenced by commitments they made, or for less conscientious agents who are less organized and may not set goals on their own (Webb et al., 2007).

We empirically test whether the effectiveness of our intervention varies based on these personality traits by interacting their respective STPS scores or Big Five score with the goal reminder treatment. Table 2 shows that the effects of goal reminders on farmer promoters' performance measured by the standardized index. We find that the effect does not differ

change thresholds rather than percentile thresholds.

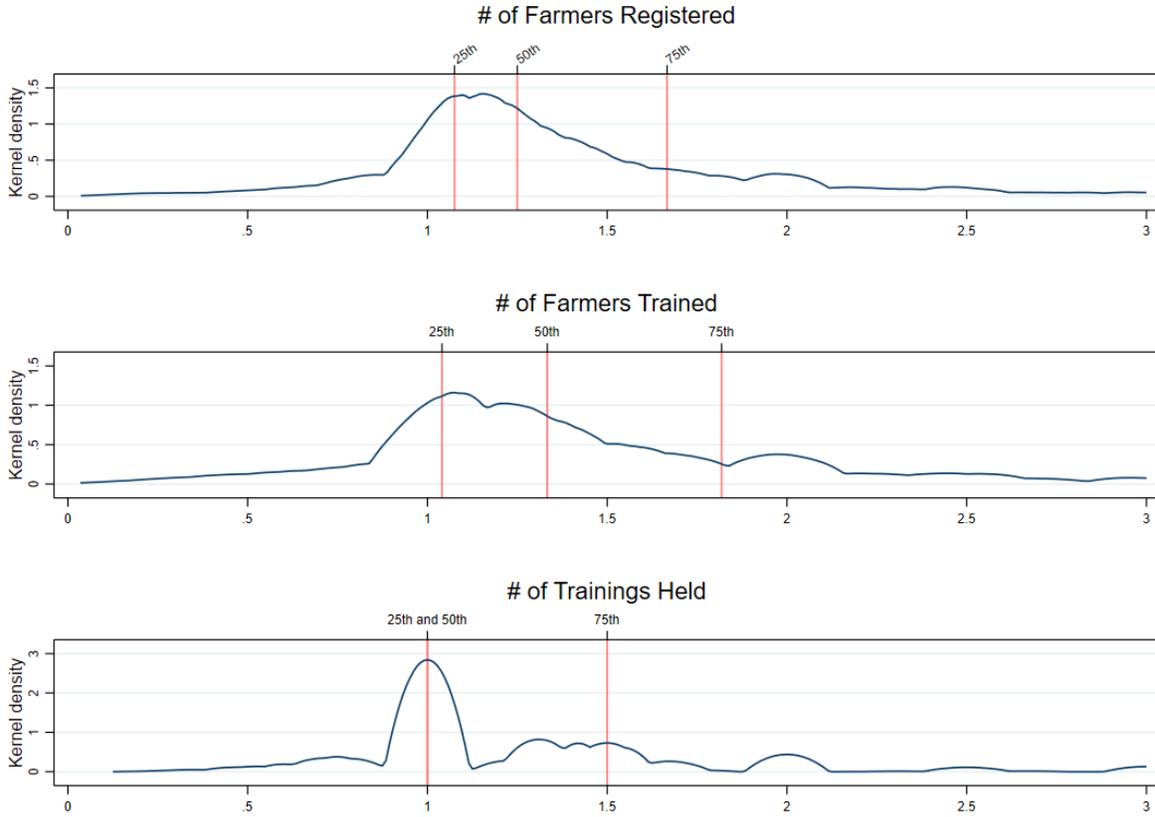
¹⁹This finding is consistent with other studies. For example, Abel et al. (2019) find that while a goal setting and action planning intervention helps job seekers to change behavior it only partially closes the intention-behavior gap.

²⁰In addition, there is limited variation in goal ambition of this outcome as 45% of farmer promoters have set a goal with the magnitude to be the same of previous performance.

by farmer promoter’s susceptibility to be convinced by commitments they made (Column 1-3), their inclination to be affected by authorities (Column 4-6), or by their conscientiousness level (Column 7-9). Table 2 shows a positive (albeit insignificant) correlation between performance and high STPS scores for commitments and authorities in the control group, suggesting that reminders may not have an additional, large effect on performance for those who have strong motivations for commitments and authorities to begin with in our setting. It is plausible the effect of goal reminders among farmer promoters who are susceptible to persuasion strategies may vary by the effectiveness of goals they set, we do not have a sufficient large sample to test the heterogeneous treatment effects by personality type across goal magnitude quartiles.

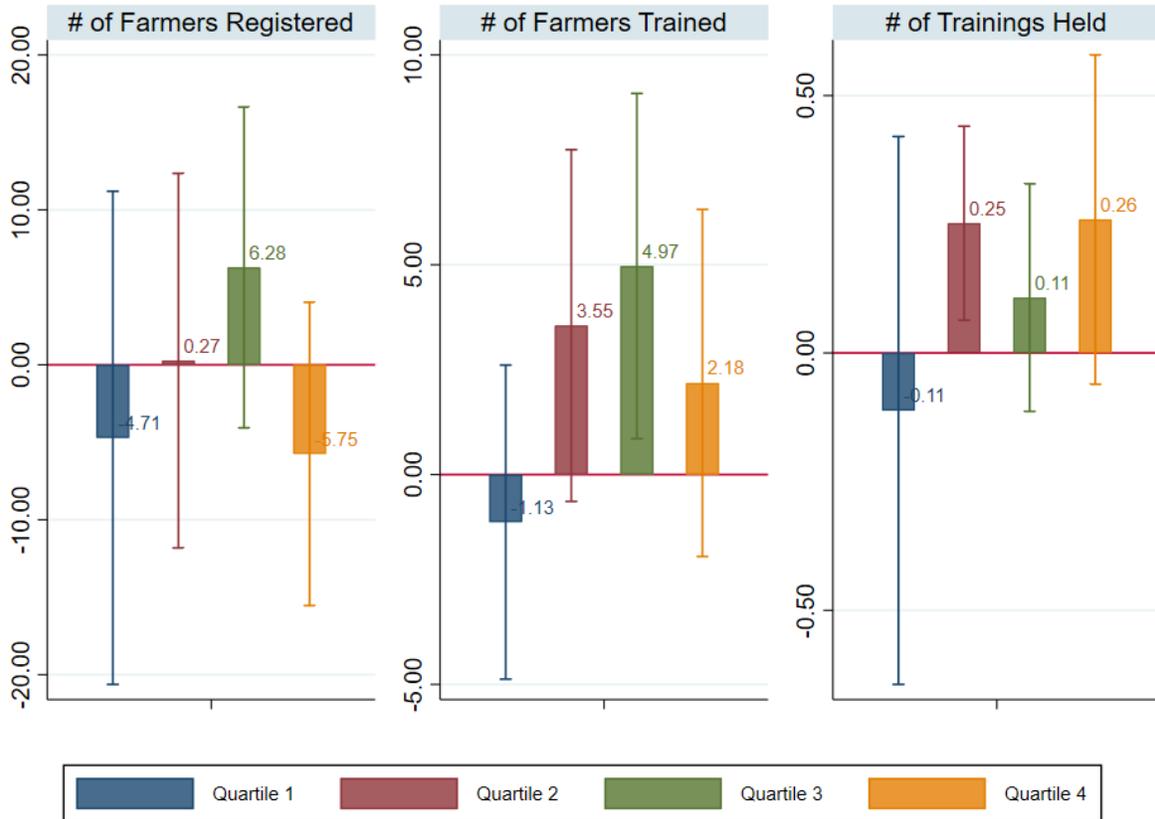
We also find it unlikely that the treatment was effective by simply bringing the goals to the top of mind as this could not explain the heterogeneous treatment effects by goal ambition we observe. We instead believe that, in line with the literature on externally set goals, the most likely explanation is that increasing the salience of goals that are too low is not motivating agents while unrealistically high goals may trigger negative reactions and deter agents from taking action. However, we do not have data to conclusively test what emotional reaction agents associate with their goals to test these exact psychological mechanisms.

Figure 3: The Distribution of Goal Ambitions



Note: The figure plots the distribution of farmer promoters' goal ambitions for the three goals they set. Goal ambitions are defined as the intended *increase* in performance over last year's respective outcomes. Red vertical lines show the values of 25th, 50th, and 75th percentiles of the full distribution. The distribution curves plot values up to 3 for a better presentation. The shares of observations that have values equal or smaller than 3 are 95%, 100%, and 93% for outcome “# of farmers registered”, “# of farmers trained”, “# of trainings held”, respectively.

Figure 4: The Role of Goal Magnitude (On-Time Sample)



Note: The figure reports the effect of goal reminders on self-reported outcomes of the on-time sample. For each outcome, analyses are conducted with four samples, defined by farmer promoters' goal ambition quartile. Outcomes are winsorized at the 99% level. Bars and numbers stand for point estimates of treatment impact and capped spikes stand for the 95% confidence interval.

Table 2: The Treatment Impact of Goal Reminders Interacting with Personality Traits

	Commitment (STPS)			Authority (STPS)			Conscientious (Big 5)		
	(1) Full	(2) On-Time	(3) Delayed	(4) Full	(5) On-Time	(6) Delayed	(7) Full	(8) On-Time	(9) Delayed
Goal Reminders	0.029 (0.020)	0.080*** (0.027)	-0.029 (0.028)	0.029 (0.020)	0.081*** (0.027)	-0.029 (0.028)	0.028 (0.020)	0.080*** (0.027)	-0.031 (0.028)
Commitment (STPS)	0.034 (0.044)	0.059 (0.048)	0.037 (0.079)						
Commitment x Reminder	-0.011 (0.057)	0.012 (0.072)	-0.055 (0.083)						
Authority (STPS)				0.040 (0.030)	0.065* (0.037)	0.020 (0.053)			
Authority x Reminder				-0.068 (0.042)	-0.068 (0.057)	-0.067 (0.064)			
Conscientiousness (Big 5)							0.012 (0.033)	-0.012 (0.048)	0.010 (0.050)
Conscientious x Reminder							-0.029 (0.046)	-0.020 (0.072)	-0.010 (0.067)
<i>N</i>	9615	5079	4516	9615	5079	4516	9615	5079	4516
<i>R</i> ²	0.025	0.034	0.021	0.025	0.034	0.021	0.026	0.035	0.021
Control mean	-0.004	-0.100	0.111	-0.004	-0.100	0.111	-0.004	-0.100	0.111
Control sd	1.039	0.988	1.081	1.039	0.988	1.081	1.039	0.988	1.081

Note: The table presents how the effects of goal reminder on the standardized outcome index vary by farmer promoters' inclination to be persuaded by commitment (Column 1-3), authority (Column 4-6), and conscientious (Column 7-9). Additional controls include motivational message randomization, farmer promoters' age, gender, education level, elected method, experience as farmer promoters, years lived in the village, and baseline survey version numbers, as listed in Table 1. Strata fixed effects are included. Standard errors are robust. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

6 Discussion: Setting Effective Goals

The previous section shows that goal reminders improve performance *conditional* on having set ambitious but not overly ambitious goals. This raises two direct questions for principals. First, given that the effect of self-set goals varies by goal magnitude, can we identify the characteristics of agents that set more effective goals? Second, can agents be nudged to adopt more effective goals?

6.1 Who sets effective goals?

Identifying observable characteristics of agents that tend to set more effective goals would allow principals to decide whether to encourage a selective set of agents to set goals for themselves. To answer this question, we examine the correlation between farmer promoters’ characteristics and the type of goals they set. Specifically, we regress an indicator for setting effective goals on farmer promoters’ characteristics. As shown in Table 3, farmer promoters who are female and have higher levels of education are more likely to set effective goals.²¹ On the contrary of our initial conjecture, the influence of psychometric characteristics appears to be limited.

To explore this question further, we adopt a random forest model to predict the setting of effective goals.²² Figure B3 presents the predictor factors that are included in the model and their corresponding importance scores. While those importance scores do not stand for causal impact, to obtain more insights, we compare the five most important predictors between farmer promoters who set effective goals vs who did not. Table C12 shows that farmer promoters who set effective goals are significantly younger and more likely to be female, similar to the patterns observed in ordinary least squares regression results.²³

²¹We will discuss the variable “ask previous performance first” in the next subsection.

²²This analysis contributes to a recent, growing literature that examines heterogeneous treatment effects using machine learning methods and presents the importance of targeting for policies. For example, [Gharad T. Bryan and Osman \(2023\)](#) finds that there are significant heterogeneity in treatment impacts of larger loans and suggest that standard approaches of credit allocations are inefficient, while machine learning models using psychometric data is able to identify “top-performers” who would achieve substantially profit increase from larger loans.

²³We also compared farmers promoters’ characteristics descriptively by the quartile of goals, shown in Table C13. We observe that farmer promoters who have higher goal ambitions are different from those who have lower goal ambitions, both in terms of demographic characteristics and psychometric characteristics when those characteristics are considered one by one.

Table 3: Farmer Promoters’ Characteristics Associated with Setting “Effective Goals”

	Set effective goals			
	(1) Demographic	(2) Psychometric	(3) Demo + Psyc	(4) Demo + Psyc + SD
Age	-0.001 (0.000)		-0.001 (0.000)	-0.001 (0.000)
Imputed age	-0.028 (0.208)		-0.033 (0.207)	-0.034 (0.209)
Male	-0.018* (0.010)		-0.018* (0.010)	-0.017* (0.010)
Primary education	0.040*** (0.012)		0.040*** (0.012)	0.039*** (0.012)
Experience FP (yr)	0.001 (0.001)		0.001 (0.001)	0.001 (0.001)
Commitment (STPS)		0.008* (0.005)	0.008* (0.005)	0.008 (0.005)
Authority (STPS)		-0.005 (0.005)	-0.005 (0.005)	-0.005 (0.005)
Conscientious (Big 5)		-0.003 (0.005)	-0.003 (0.005)	-0.004 (0.005)
Social desirability score				0.007* (0.004)
Ask previous performance first	-0.039*** (0.008)	-0.040*** (0.008)	-0.038*** (0.008)	-0.037*** (0.008)
Goal Reminders	0.001 (0.008)	0.001 (0.008)	0.001 (0.008)	0.001 (0.008)
Motivational Messages	0.006 (0.010)	0.005 (0.010)	0.006 (0.010)	0.006 (0.010)
<i>N</i>	15639	15639	15639	15639
<i>R</i> ²	0.003	0.002	0.003	0.003
Control mean	0.571	0.571	0.571	0.571

Note: The table presents the correlation between farmer promoters’ characteristics and whether farmer promoters’ set effective goals. The analysis sample includes the three goals set in baseline survey for each farmer promoter. Strata fixed effects are included. Standard errors are clustered at the farmer promoter level. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

After tuning hyper-parameters²⁴, our final random forest model has an accuracy rate of 0.55. Table C14 shows the confusion matrix and Table C15 presents the classification report of the model. Both the accuracy of detecting of one class (i.e., precision) and the accuracy of predicting one class (i.e., recall) are around 0.5. The harmonic mean of precision and recall (i.e., F-1 score) is also around 0.5. While the current random forest model predicts the “effective-goal” class slightly better compared to the “ineffective-goal” class, the overall performance of the model would require a substantial improvement for effective targeting, suggesting that even with rich personality data it is difficult to identify which agent will set effective goals in our setting.

6.2 How to nudge farmer promoters to set effective goals?

The next key question is whether it is possible and advisable to encourage agents to set effective goals. The scant existing evidence suggests that nudging people to set more ambitious goals is challenging. van Lent and Souverijn (2020) find that convincing students to adopt higher goals has detrimental effects on learning outcome. One explanation is that students may not “own” these goals and are thus less committed and intrinsically motivated (Hollenbeck et al., 1989). We experimented a novel light-touch approach that aims to exogenously change the magnitude of goals that agents set for themselves by randomizing whether we first asked respondents to recall their last year’s performance before setting their goal for the upcoming season. We anticipate that asking respondents about their previous performance first would make them set lower goals that are more realistic to achieve.

Table 4 shows the effect of this survey order randomization. Columns 1-3 present the effect on the goal magnitude, specifically the number of farmers that farmer promoters intended to help with the registration of subsidized inputs. We indeed find that farmer promoters set *lower* goals if the survey first asked about last year’s performance. On average, farmer promoters state that they plan to register 5 (4%) fewer farmers.²⁵ While first asking about last year’s performance leads to more realist goal, has it helped farmer promoters set more effective goals? Column 4-5 show that this benchmarking in fact *decreases* the probability of setting goals in the range that our analysis suggests is most effective by around 7.3

²⁴Our final model has an out-of-bag error rate of 0.468 and a validation error rate of 0.453.

²⁵We also randomized the order for the number of meetings held and the number of farmers trained. For the number of meetings held, the coefficient is insignificant, possibly because this discrete measure is harder to move as 80% of farmer promoters report between two and four meetings. For the number of farmers trained, the first stage is significant but does not meet the criteria for strong instruments.

percentage points (14.5%). One explanation is that the survey order assists the attainable and realistic aspect, but overlooks the ambitious requirement of effective goals.

Table 4: The Effect of Survey Order on Goal Setting (IV First Stage)

	Goal on # of Farmers Registered			Set Effective Goal on # of Farmers Registered	
	(1)	(2)	(3)	(4)	(5)
Ask previous performance first	-5.853*** (2.166)	-5.774*** (2.093)	-5.000*** (1.523)	-0.072*** (0.013)	-0.073*** (0.013)
Previous performance (2021)			0.793*** (0.012)		
<i>N</i>	5330	5330	5328	5220	5220
<i>R</i> ²	0.001	0.035	0.606	0.005	0.011
Control mean	134.278	134.278	134.283	0.504	0.504
Control sd	83.431	83.431	83.447	0.500	0.500
Include covariates	N	Y	Y	N	Y
Include baseline value	N	N	Y	N	N

Note: The table reports the first stage estimations of the effect of being asked about the previous performance first on farmer promoters' goal magnitude and setting an effective goal or not for the number of farmers registered outcome. Additional controls include motivational message randomization, farmer promoters' age, gender, education level, elected method, experience as farmer promoters, years lived in the village, 6 STPS scores, 5 Big 5 scores, and social desirability score, as listed in Table 1. Strata fixed effects are included. Standard errors are robust. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

This exogenous variation in goal magnitude provides an opportunity to test for the causal effect of setting effective goals. Specifically, we instrument for the goal magnitude and effectiveness with our random survey order indicator in the first stage and then estimate whether adopting effective goals has an effect on performance in the second stage. Table C16 shows that adopting effective goals increases performance by 7.7% (Table C16 Column 2). While this estimate is consistent with our previous results, it is estimated imprecisely and is not statistically significant. Unfortunately, the F-stat in the first stage is too small

to conduct subgroup analysis for the effectiveness of reminders or how effects differ by goal magnitude. Overall, we interpret results in this section as suggestive evidence that it is possible to nudge people to set different goals for themselves, but that one needs to carefully assess whether these nudged new goals are more or less likely to be in the range that is effective.

7 Conclusion

Using a randomized controlled trial, we demonstrate that goal reminders are effective in improving agents' performance in the context of agricultural extension volunteers in Rwanda. Sending three text messages to remind farmer promoters about their goals leads to increases of around 2 to 4% in the numbers of farmers registered for subsidized inputs, trainings held, and farmers trained or a 0.08 standard deviation increase in an aggregate performance index. Importantly, our study shows that the seminal finding from the studies of externally set goals that ambitious but realistic goals are most effective extends to self-set goals. The relationship between goal magnitude and treatment effects follows an inverted U-shape.

We further explore which type of farmer promoters set effective goals and whether farmer promoters can be nudged to set different goals. We identify a set of demographic characteristics that are associated with setting effective goals, but our random forest analysis suggests that our baseline data from a 30-min phone survey are insufficient to identify effective targeting. Additionally, we observe that a simple survey tweak could influence the likelihood of agents setting an effective goal. We find a positive and imprecise effect of the induced increase in the likelihood of setting an effective goal via survey design on farmer promoters' performance. However, the study was not sufficiently powered to detect a small performance improvement with statistical significance.

The magnitude of the average impact of this goal intervention is modest. Nevertheless, the cost of the intervention is extremely small, making it highly cost-effective. Considering that the marginal cost associated with sending out all three text messages is only \$0.005 dollar, sending \$1 dollar worth of goal reminder messages could lead to 362 more farmers being trained. While cost-effectiveness analyses of extension initiatives are limited, this figure compares favorably to studies showing that providing a bag of legume seeds worth approximately \$16 dollars as a performance incentive to local communicators in Malawi leads to

191 more farmers being trained (BenYishay and Mobarak, 2019),²⁶ and especially to direct in-person farmer training programs, such as farmer field days typically targeting 100-300 farmers per session, which cost about \$9 dollars in Kenya (Fabregas et al., 2022) and \$5.58 dollars in India (Emerick and Dar, 2021) per farmer.

The lessons learned from this study are relevant for other decentralized systems where it is either not feasible or not advisable for principals to set individual goals for agents. This may for example include volunteer health workers and teachers in rural areas. Our findings are also relevant for other work settings including the increasing share of jobs that include team work, for which it is difficult to measure contributions of individual group members. Going beyond settings with principal-agent relationships, self-set goals are of paramount importance for aspects of people’s personal life. Our results suggest that it is the act of setting effective goals itself, and not (only) the type of person, that makes goal-setting a powerful tool to change behavior. However, whether and how people can be influenced to set more effective goals for themselves remains an open question that requires additional research.

²⁶The intervention was having 5 communicators (i.e., peer farmers) per village to train farmers on new practices. Each peer farmer received a package of legume seeds as an incentive, with the maximum award value per village as 12,000 MWK (i.e., US\$80).

References

- ABEL, M., R. BURGER, E. CARRANZA, AND P. PIRAINO (2019): “Bridging the intention-behavior gap? The effect of plan-making prompts on job search and employment,” *American Economic Journal: Applied Economics*, 11, 284–301.
- BANERJEE, A. V., S. CHASSANG, S. MONTERO, AND E. SNOWBERG (2020): “A theory of experimenters: Robustness, randomization, and balance,” *American Economic Review*, 110, 1206–30.
- BENYISHAY, A. AND A. M. MOBARAK (2019): “Social learning and incentives for experimentation and communication,” *The Review of Economic Studies*, 86, 976–1009.
- CASTLEMAN, B. L. AND L. C. PAGE (2016): “Freshman year financial aid nudges: An experiment to increase FAFSA renewal and college persistence,” *The Journal of Human Resources*, 51, 389–415.
- CIALDINI, R. B. (2001): “The science of persuasion,” *Scientific American*, 284, 76–81.
- CROWNE, D. P. AND D. MARLOWE (1960): “A new scale of social desirability independent of psychopathology,” *Journal of Consulting Psychology*, 24, 349–354.
- CUMBERBATCH, J. R. AND G. C. BARNES (2018): “This nudge was not enough: A randomised trial of text message reminders of court dates to victims and witnesses,” *Cambridge Journal of Evidence-Based Policing*, 2, 35–51.
- DHAR, D., T. JAIN, AND S. JAYACHANDRAN (2022): “Reshaping adolescents’ gender attitudes: Evidence from a school-based experiment in India,” *American economic review*, 112, 899–927.
- DOBRONYI, C., P. OREOPOULOS, AND U. PETRONIJEVIC (2017): “Goal setting, academic reminders, and college success: A large-scale field experiment,” *NBER Working Paper*, w23738.
- DORAN, G. T. ET AL. (1981): “There’s a SMART way to write management’s goals and objectives,” *Management review*, 70, 35–36.
- DRACH-ZAHAVY, A. AND M. EREZ (2002): “Challenge versus threat effects on the goal-performance relationship,” *Organizational Behavior and Human Decision Processes*, 88, 667–682.
- DWECK, C. S. (2006): *Mindset: The new psychology of success*, Random house.
- EMERICK, K. AND M. H. DAR (2021): “Farmer field days and demonstrator selection for increasing technology adoption,” *The Review of Economics and Statistics*, 103, 680–693.

- FABREGAS, R., M. KREMER, M. LOWES, R. ON, AND G. ZANE (2022): “Digital information provision and behavior change: Lessons from six experiments in East Africa,” *Working Paper*.
- FALK, A. AND M. KNELL (2004): “Choosing the Joneses: Endogenous goals and reference standards,” *The Scandinavian Journal of Economics*, 106, 417–435.
- GHARAD T. BRYAN, D. K. AND A. OSMAN (2023): “Big loans to small businesses: Predicting winners and losers in an entrepreneurial lending experiment,” *NBER Working Paper*, w29311.
- GOERG, S. J. (2015): “Goal setting and worker motivation,” *IZA World of Labor*.
- GROHMANN, A., T. LAKEMANN, AND H. SEITZ (2020): “Savings goal calendars as soft commitment devices: Evidence from small business owners in Uganda,” *DIW Berlin Discussion Paper*, 1919.
- HEATH, C., R. P. LARRICK, AND G. WU (1999): “Goals as reference points,” *Cognitive psychology*, 38, 79–109.
- HIRST, Y., H. SKROBANSKI, R. S. KERRISON, L. C. KOBAYASHI, N. COUNSELL, N. DJEDOVIC, J. RUWENDE, M. STEWART, AND C. VON WAGNER (2017): “Text-message reminders in colorectal cancer screening (TRICCS): A randomised controlled trial,” *British Journal of Cancer*, 116, 1408–1414.
- HOLLENBECK, J. R., C. R. WILLIAMS, AND H. J. KLEIN (1989): “An empirical examination of the antecedents of commitment to difficult goals,” *Journal of applied psychology*, 74, 18.
- HOLMSTROM, B. AND P. MILGROM (1991): “Multitask principal-agent analyses: Incentive contracts, asset ownership, and job design,” *Journal of Law, Economics, & Organization*, 7, 24–52.
- ISLAM, A., S. KWON, E. MASOOD, N. PRAKASH, S. SABARWAL, AND D. SARASWAT (2022): “When goal-setting forges ahead but stops short: Evidence from an at scale experiment in Tanzania,” .
- KAPTEIN, M., B. DE RUYTER, P. MARKOPOULOS, AND E. AARTS (2012): “Adaptive persuasive systems: A study of tailored persuasive text messages to reduce snacking,” *ACM Transactions on Interactive Intelligent Systems*, 2, 1–25.
- KARLAN, D., M. MCCONNELL, S. MULLAINATHAN, AND J. ZINMAN (2016): “Getting to the top of mind: How reminders increase saving,” *Management Science*, 62, 3393–3411.
- KAUR, S., M. KREMER, AND S. MULLAINATHAN (2015): “Self-control at work,” *Journal of Political Economy*, 123, 1227–1277.

- KEDING, A., S. BRABYN, H. MACPHERSON, S. RICHMOND, AND D. TORGERSON (2016): “Text message reminders to improve questionnaire response rates,” *Journal of Clinical Epidemiology*, 79, 90–95.
- KLING, J. R., J. B. LIEBMAN, AND L. F. KATZ (2007): “Experimental analysis of neighborhood effects,” *Econometrica*, 75, 83–119.
- LATHAM, G. P. (2012): “Motivate employee performance through goal setting,” in *Handbook of Principles of Organizational Behavior: Indispensable Knowledge for Evidence-Based Management*, ed. by E. A. Locke, Wiley.
- LEE, F. K., K. M. SHELDON, AND D. B. TURBAN (2003): “Personality and the goal-striving process: the influence of achievement goal patterns, goal level, and mental focus on performance and enjoyment,” *Journal of Applied Psychology*, 88, 256.
- LOCKE, E. A. AND G. P. LATHAM (2002): “Building a practically useful theory of goal setting and task motivation: A 35-year odyssey.” *American psychologist*, 57, 705.
- (2006): “New directions in goal-setting theory,” *Current Directions in Psychological Science*, 15, 265–268.
- LÖSCHEL, A., M. RODEMEIER, AND M. WERTHSCHULTE (2023): “Can self-set goals encourage resource conservation? Field experimental evidence from a smartphone app,” *European Economic Review*, 160.
- MARC A. ADAMS, JANE C. HURLEY, M. T. N. B. C. L. J. W. J. T. K. E. H. AND S. S. ANGADI (2017): “Adaptive goal setting and financial incentives: A 2×2 factorial randomized controlled trial to increase adults’ physical activity,” *BMC Public Health*, 17.
- MORISANO, D., J. B. HIRSH, J. B. PETERSON, R. O. PIHL, AND B. M. SHORE (2010): “Setting, elaborating, and reflecting on personal goals improves academic performance.” *Journal of applied psychology*, 95, 255.
- RAMMSTEDT, B. AND O. P. JOHN (2007): “Measuring personality in one minute or less: A 10-item short version of the Big Five Inventory in English and German,” *Journal of Research in Personality*, 41, 203–212.
- TEO, T. C. AND K. C. P. LOW (2016): “The impact of goal setting on employee effectiveness to improve organisation effectiveness: Empirical study of a high-tech company in Singapore,” *Journal of Business & Economic Policy*, 3, 1–16.
- TRAVERS, C. J., D. MORISANO, AND E. A. LOCKE (2015): “Self-reflection, growth goals, and academic outcomes: A qualitative study,” *British journal of educational psychology*, 85, 224–241.
- VAN LENT, M. (2019): “Goal setting, information, and goal revision: A field experiment,” *German Economic Review*, 20, 949–972.

- VAN LENT, M. AND M. SOUVERIJN (2020): “Goal setting and raising the bar: A field experiment,” *Journal of Behavioral and Experimental Economics*, 87, 101570.
- WEBB, T. L., J. CHRISTIAN, AND C. J. ARMITAGE (2007): “Helping students turn up for class: Does personality moderate the effectiveness of an implementation intention intervention?” *Learning and individual differences*, 17, 316–327.
- YOUSSEF, A., H. ALHARTHI, O. A. KHALDI, F. ALNAIMI, N. ALSUBAIE, AND N. AL-FARISS (2014): “Effectiveness of text message reminders on nonattendance of outpatient clinic appointments in three different specialties: A randomized controlled trial in a Saudi hospital,” *Journal of Taibah University Medical Sciences*, 9, 23–29.

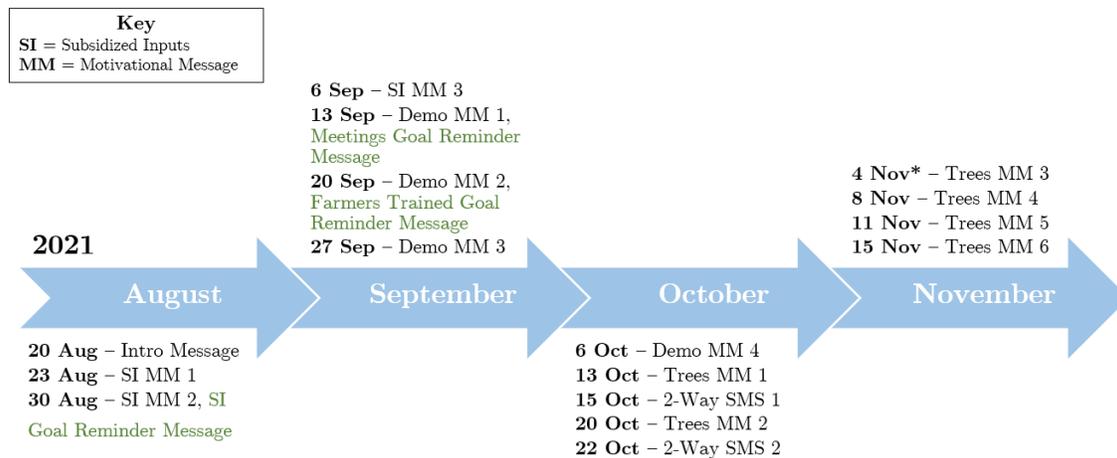
Appendix

A Reminder Messages

- **Subsidized Inputs - Registering Farmers** - Remember you said your goal for this season was to help XXX farmers register for subsidized inputs! Keep up with your goal!
- **Demo Plots - Training Meetings** - Remember you said your goal for this season was to hold X training meetings on your demonstration plot! Keep up with your goal!
- **Demo Plots - Farmers Trained** - Remember you said your goal for this season was to train XXX farmers on your demonstration plot! Keep up with your goal!

B Additional Figures

Figure B1: Timeline of Intervention Messages



* Note: 4 additional Trees MMs planned for November were not sent due to programming issues.

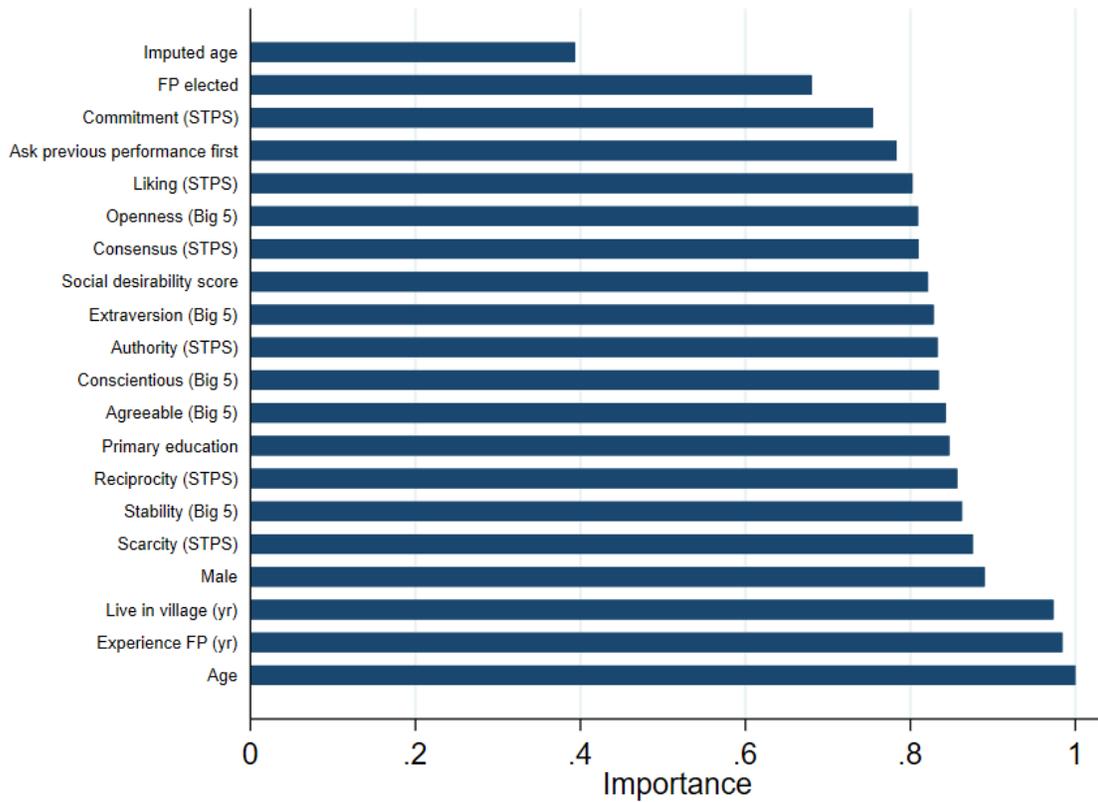
Note: The figure presents the timing of all messages sent in this 2×2 full project. Goal reminder messages are listed in green.

Figure B2: The Role of Goal Magnitude (Delayed Sample)



Note: The figure reports the effect of goal reminders on self-reported outcomes of the delayed sample. For each outcome, analyses are conducted with four samples, defined by farmer promoters' goal ambition quartile. Outcomes are winsorized at the 99% level. Bars and numbers stand for point estimates of treatment impact and capped spikes stand for the 95% confidence interval.

Figure B3: Prediction of Setting Effective Goals: Importance Scores of Predictors



Note: The figure reports the importance scores of predictors used in the random forest model that aims to predict which farmer promoters set effective goals. The variable importance scores are normalized by dividing over the maximum score, such as the score of the most important variable is 1.

C Additional Tables

Table C1: Endline Survey Attrition: Goal Reminder Treatment

	(1)	(2)	(3)	(4)
	Call Attempted	Call Received	Consented	Completed Survey
Received goal reminder	0.002 (0.003)	0.002 (0.003)	-0.001 (0.003)	-0.001 (0.003)
<i>N</i>	10187	9924	9924	9924
<i>R</i> ²	0.000	0.000	0.000	0.000
Control Mean	0.975	0.980	0.968	0.968

Note: This table compares the survey attrition between farmer promoters in the goal reminder message control group and in the treatment group. Call attempted indicates that the enumerators attempted to reach the individual. Call received indicates that the individual answered the phone. Consented indicates that the individual consented to take the survey. Completed survey indicates that the individual completed the survey as marked by the enumerator. Strata fixed effects are included. Standard errors are robust. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table C2: Comparison between the Timing of Goal Reminders and the Timing of Farmer Promoters' Work

	(1)	(2)	(3)	(4)
	Subsidized inputs	Demo. plot: # of meetings	Demo. plot: # of farmers trained	Overall
<i>Timing of goal reminder messages and timing of farmer promoters' work</i>				
1st goal reminder	August 30	September 13	September 20	
Work time	Asked in EL	N/A	Asked in EL	
<i>Construction of "on-time sample" indicator variables</i>				
	Input registration works were conducted after Aug. 30	Farmer training works were conducted after Sept. 20		Received either input message or demo. plot message on time
Definition				
Sample size	1,869 (20%)	4,512 (49%)		5,079 (53%)

Note: "EL" stands for the endline survey. "Sample size" row shows the numbers of farmer promoters who received the goal reminder messages before conducting their works and their corresponding share of the sample that reported work time.

Table C3: The Timing of Farmer Promoters' Work between Experimental Groups

Variable	(1) Total		(2) No Reminder		(3) Goal Reminder		(3)-(2) Pairwise t-test	
	N	Mean/(SD)	N	Mean/(SD)	N	Mean/(SD)	N	Mean difference
Received input goal reminders on time	9454	0.198 (0.398)	4720	0.207 (0.405)	4734	0.189 (0.391)	9454	-0.018**
Received demo. plot goal reminders on time	9186	0.491 (0.500)	4591	0.494 (0.500)	4595	0.488 (0.500)	9186	-0.006
Received any goal reminders on time	9595	0.529 (0.499)	4794	0.534 (0.499)	4801	0.525 (0.499)	9595	-0.009
F-test of joint significance (P-value)								0.166
F-test, number of observations								9045

Note: The table presents the shares of farmer promoters that received goal reminder messages on-time in the full sample, control group, and treatment group. Standard errors are robust in the t-tests and F-tests. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table C4: Descriptive Statistics of the On-Time Sample and Delayed Sample

Variable	(1) Total		(2) On-Time Sample		(3) Delayed Sample		(3)-(2) Pairwise t-test	
	N	Mean/(SD)	N	Mean/(SD)	N	Mean/(SD)	N	Mean difference
Age	9590	47.102 (9.993)	5077	47.238 (10.108)	4513	46.949 (9.862)	9590	-0.289
Male	9595	0.779 (0.415)	5079	0.780 (0.414)	4516	0.779 (0.415)	9595	-0.001
Completed primary education	9595	0.846 (0.361)	5079	0.842 (0.365)	4516	0.850 (0.357)	9595	0.008
FP elected	9595	0.950 (0.218)	5079	0.945 (0.229)	4516	0.955 (0.206)	9595	0.011**
Experience as FP (yr)	9595	6.656 (3.574)	5079	6.510 (3.545)	4516	6.821 (3.600)	9595	0.311***
Live in village (yr)	9595	34.848 (17.284)	5079	34.652 (17.437)	4516	35.069 (17.111)	9595	0.418
Reciprocity score (STPS)	9595	-0.003 (0.998)	5079	0.003 (1.000)	4516	-0.010 (0.995)	9595	-0.013
Scarcity score (STPS)	9595	-0.005 (1.003)	5079	0.001 (1.013)	4516	-0.012 (0.991)	9595	-0.013
Authority score (STPS)	9595	0.000 (1.000)	5079	0.003 (1.002)	4516	-0.003 (0.998)	9595	-0.005
Commitment score (STPS)	9595	-0.004 (1.000)	5079	-0.011 (1.017)	4516	0.005 (0.982)	9595	0.016
Consensus score (STPS)	9595	-0.003 (1.002)	5079	-0.014 (1.016)	4516	0.009 (0.985)	9595	0.023
Liking score (STPS)	9595	-0.000 (0.999)	5079	-0.016 (1.017)	4516	0.017 (0.978)	9595	0.032
Extraversion score (Big 5)	9595	0.002 (0.994)	5079	0.008 (0.985)	4516	-0.006 (1.003)	9595	-0.014
Agreeableness score (Big 5)	9595	0.003 (0.998)	5079	0.006 (1.005)	4516	0.000 (0.991)	9595	-0.006
Neuroticism score (Big 5)	9595	0.001 (1.000)	5079	0.006 (1.007)	4516	-0.005 (0.992)	9595	-0.011
Conscientiousness score (Big 5)	9595	-0.002 (0.999)	5079	0.009 (0.988)	4516	-0.015 (1.011)	9595	-0.024
Openness score (Big 5)	9595	0.002 (0.998)	5079	0.011 (0.997)	4516	-0.008 (0.999)	9595	-0.019
Social desirability score	9595	-0.002 (1.000)	5079	0.006 (1.006)	4516	-0.012 (0.994)	9595	-0.019
Baseline survey version	9595	1.862 (1.036)	5079	1.839 (1.035)	4516	1.887 (1.035)	9595	0.048**
Number of farmers registered	9589	104.221 (80.975)	5073	99.771 (79.020)	4516	109.220 (82.841)	9589	9.449***
Number of trainings held	9394	3.581 (1.916)	4953	3.582 (1.905)	4441	3.580 (1.927)	9394	-0.002
Number of farmers trained	9349	60.348 (39.536)	4932	58.851 (39.101)	4417	62.020 (39.954)	9349	3.168***
F-test of joint significance (P-value)								0.000***
F-test, number of observations								9343

Note: Data is from the baseline survey. On-time sample and delayed sample are defined based on the overall categorization (i.e., Table C2 Column 4). Strata fixed effects are included in the t-tests and F-test. Standard errors are in parentheses. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level. The baseline survey versions refer to the four versions of survey questions we used to elicit farmer promoters' goals. In all versions, we also asked farmer promoters about their previous performance in terms of absolute magnitudes. In the first and second version of survey, we asked farmer promoters about their goals in terms of absolute magnitudes. The first version asked about goals first, while the second version asked about previous performances first. In the third and fourth version of surveys, previous performances were asked first, and then goals were asked in terms of percentage compared to the previous performance. The third version used a set of low percentage options (i.e., 5%-15%), while the fourth version used a set of high percentage options (i.e., 20%-40%). Performance variables (i.e., number of farmers registered, number of trainings held, and number of farmers trained) refer to performances in the previous year (2021).

Table C5: Descriptive Statistics and Randomization Balance within the On-Time Sample

Variable	(1) Total		(2) No Reminder		(3) Goal Reminder		(3)-(2) Pairwise t-test	
	N	Mean/(SD)	N	Mean/(SD)	N	Mean/(SD)	N	Mean difference
Age	5077	47.238 (10.108)	2557	47.105 (10.060)	2520	47.373 (10.157)	5077	0.268
Male	5079	0.780 (0.414)	2559	0.781 (0.414)	2520	0.779 (0.415)	5079	-0.002
Completed primary education	5079	0.842 (0.365)	2559	0.841 (0.365)	2520	0.843 (0.364)	5079	0.002
FP elected	5079	0.945 (0.229)	2559	0.941 (0.236)	2520	0.949 (0.220)	5079	0.008
Experience as FP (yr)	5079	6.510 (3.545)	2559	6.495 (3.577)	2520	6.525 (3.514)	5079	0.031
Live in village (yr)	5079	34.652 (17.437)	2559	34.688 (17.364)	2520	34.615 (17.513)	5079	-0.072
Reciprocity score (STPS)	5079	0.003 (1.000)	2559	0.002 (0.999)	2520	0.005 (1.001)	5079	0.003
Scarcity score (STPS)	5079	0.001 (1.013)	2559	-0.010 (1.043)	2520	0.013 (0.981)	5079	0.022
Authority score (STPS)	5079	0.003 (1.002)	2559	-0.001 (0.998)	2520	0.007 (1.007)	5079	0.008
Commitment score (STPS)	5079	-0.011 (1.017)	2559	-0.026 (1.043)	2520	0.004 (0.990)	5079	0.030
Consensus score (STPS)	5079	-0.014 (1.016)	2559	-0.029 (1.008)	2520	0.001 (1.024)	5079	0.030
Liking score (STPS)	5079	-0.016 (1.017)	2559	-0.015 (1.017)	2520	-0.016 (1.018)	5079	-0.000
Extraversion score (Big 5)	5079	0.008 (0.985)	2559	0.009 (0.983)	2520	0.007 (0.988)	5079	-0.002
Agreeableness score (Big 5)	5079	0.006 (1.005)	2559	-0.000 (1.019)	2520	0.012 (0.990)	5079	0.012
Neuroticism score (Big 5)	5079	0.006 (1.007)	2559	-0.006 (0.991)	2520	0.019 (1.023)	5079	0.026
Conscientiousness score (Big 5)	5079	0.009 (0.988)	2559	0.004 (0.999)	2520	0.015 (0.977)	5079	0.011
Openness score (Big 5)	5079	0.011 (0.997)	2559	0.024 (0.990)	2520	-0.003 (1.003)	5079	-0.027
Social desirability score	5079	0.006 (1.006)	2559	0.008 (1.005)	2520	0.004 (1.007)	5079	-0.004
Baseline survey version	5079	1.839 (1.035)	2559	1.847 (1.048)	2520	1.831 (1.022)	5079	-0.015
Number of farmers registered	5073	99.771 (79.020)	2557	97.965 (77.260)	2516	101.607 (80.744)	5073	3.643
Number of trainings held	4953	3.582 (1.905)	2487	3.556 (1.863)	2466	3.609 (1.948)	4953	0.053
Number of farmers trained	4932	58.851 (39.101)	2477	58.192 (38.527)	2455	59.517 (39.669)	4932	1.325
F-test of joint significance (P-value)								0.978
F-test, number of observations								4929

Note: Data is from the baseline survey. On-time sample and delayed sample are defined based on the overall categorization (i.e., Table C2 Column 4). Strata fixed effects are included in the t-tests and F-test. Standard errors are in parentheses. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level. The baseline survey versions refer to the four versions of survey questions we used to elicit farmer promoters' goals. In all versions, we also asked farmer promoters about their previous performance in terms of absolute magnitudes. In the first and second version of survey, we asked farmer promoters about their goals in terms of absolute magnitudes. The first version asked about goals first, while the second version asked about previous performances first. In the third and fourth version of surveys, previous performances were asked first, and then goals were asked in terms of percentage compared to the previous performance. The third version used a set of low percentage options (i.e., 5%-15%), while the fourth version used a set of high percentage options (i.e., 20%-40%). Performance variables (i.e., number of farmers registered, number of trainings held, and number of farmers trained) refer to performances in the previous year (2021).

Table C6: Descriptive Statistics and Randomization Balance within the Delayed Sample

Variable	(1) Total		(2) No Reminder		(3) Goal Reminder		(3)-(2) Pairwise t-test	
	N	Mean/(SD)	N	Mean/(SD)	N	Mean/(SD)	N	Mean difference
Age	4513	46.949 (9.862)	2233	47.216 (9.895)	2280	46.688 (9.824)	4513	-0.529**
Male	4516	0.779 (0.415)	2235	0.792 (0.406)	2281	0.765 (0.424)	4516	-0.027*
Completed primary education	4516	0.850 (0.357)	2235	0.847 (0.360)	2281	0.852 (0.355)	4516	0.005
FP elected	4516	0.955 (0.206)	2235	0.954 (0.210)	2281	0.957 (0.203)	4516	0.003
Experience as FP (yr)	4516	6.821 (3.600)	2235	6.875 (3.600)	2281	6.769 (3.599)	4516	-0.106
Live in village (yr)	4516	35.069 (17.111)	2235	35.383 (17.162)	2281	34.762 (17.058)	4516	-0.621
Reciprocity score (STPS)	4516	-0.010 (0.995)	2235	0.002 (0.984)	2281	-0.022 (1.005)	4516	-0.024
Scarcity score (STPS)	4516	-0.012 (0.991)	2235	-0.015 (0.991)	2281	-0.009 (0.992)	4516	0.005
Authority score (STPS)	4516	-0.003 (0.998)	2235	0.010 (0.975)	2281	-0.015 (1.020)	4516	-0.025
Commitment score (STPS)	4516	0.005 (0.982)	2235	-0.006 (1.006)	2281	0.016 (0.957)	4516	0.021
Consensus score (STPS)	4516	0.009 (0.985)	2235	0.017 (0.986)	2281	0.001 (0.985)	4516	-0.015
Liking score (STPS)	4516	0.017 (0.978)	2235	0.035 (0.962)	2281	-0.001 (0.993)	4516	-0.036
Extraversion score (Big 5)	4516	-0.006 (1.003)	2235	0.003 (1.021)	2281	-0.014 (0.985)	4516	-0.017
Agreeableness score (Big 5)	4516	0.000 (0.991)	2235	0.018 (0.994)	2281	-0.018 (0.989)	4516	-0.036
Neuroticism score (Big 5)	4516	-0.005 (0.992)	2235	-0.008 (0.985)	2281	-0.001 (0.998)	4516	0.007
Conscientiousness score (Big 5)	4516	-0.015 (1.011)	2235	-0.005 (1.016)	2281	-0.024 (1.007)	4516	-0.019
Openness score (Big 5)	4516	-0.008 (0.999)	2235	0.009 (0.989)	2281	-0.026 (1.009)	4516	-0.035
Social desirability score	4516	-0.012 (0.994)	2235	-0.014 (0.999)	2281	-0.011 (0.988)	4516	0.002
Baseline survey version	4516	1.887 (1.035)	2235	1.886 (1.037)	2281	1.888 (1.034)	4516	0.001
Number of farmers registered	4516	109.220 (82.841)	2235	107.680 (78.947)	2281	110.730 (86.477)	4516	3.050
Number of trainings held	4441	3.580 (1.927)	2200	3.615 (1.943)	2241	3.546 (1.911)	4441	-0.069
Number of farmers trained	4417	62.020 (39.954)	2187	62.796 (40.196)	2230	61.259 (39.711)	4417	-1.537
F-test of joint significance (P-value)								0.364
F-test, number of observations								4414

Note: Data is from the baseline survey. On-time sample and delayed sample are defined based on the overall categorization (i.e., Table C2 Column 4). Strata fixed effects are included in the t-tests and F-test. Standard errors are robust. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level. The baseline survey versions refer to the four versions of survey questions we used to elicit farmer promoters' goals. In all versions, we also asked farmer promoters about their previous performance in terms of absolute magnitudes. In the first and second version of survey, we asked farmer promoters about their goals in terms of absolute magnitudes. The first version asked about goals first, while the second version asked about previous performances first. In the third and fourth version of surveys, previous performances were asked first, and then goals were asked in terms of percentage compared to the previous performance. The third version used a set of low percentage options (i.e., 5%-15%), while the fourth version used a set of high percentage options (i.e., 20%-40%). Performance variables (i.e., number of farmers registered, number of trainings held, and number of farmers trained) refer to performances in the previous year (2021).

Table C7: The Treatment Impact of Goal Reminders

	# of Farmers Registered			# of Farmers Trained			# of Trainings Held			Overall Performance (Index)		
	(1) Full	(2) On-Time	(3) Delayed	(4) Full	(5) On-Time	(6) Delayed	(7) Full	(8) On-Time	(9) Delayed	(10) Full	(11) On-Time	(12) Delayed
Goal Reminders	1.221 (1.055)	1.640 (2.471)	0.500 (1.247)	0.985 (0.675)	1.814* (0.920)	0.159 (0.966)	0.028 (0.046)	0.155** (0.062)	-0.105* (0.064)	0.029 (0.020)	0.080*** (0.027)	-0.030 (0.028)
<i>N</i>	9606	1869	7580	9590	4487	4674	9600	4497	4674	9615	5079	4516
<i>R</i> ²	0.021	0.046	0.016	0.026	0.035	0.024	0.005	0.009	0.007	0.026	0.036	0.022
Control mean	94.394	85.949	98.338	60.243	58.011	62.838	3.764	3.625	3.952	-0.004	-0.100	0.111
Control sd	60.674	62.257	59.218	35.092	33.605	36.775	2.248	2.082	2.424	1.039	0.988	1.081

Note: The table reports the effect of goal reminders on self-reported outcomes collected in the endline survey. Outcomes are winsorized at the 99% level. Sample indicates whether farmer promoters received goal reminders before (on-time) or after (delayed) they completed the majority of their activities. Column (1)-(3) use the timing of goal reminders of the subsidized input setting, column (4)-(9) use the timing of goal reminders of the demonstration plot setting, and column (10)-(12) use the combination of the timings from those two settings, such as on-time indicating on-time in either settings. Additional controls include motivational message randomization, farmer promoters' age, gender, education level, elected method, experience as farmer promoters, years lived in the village, 6 STPS scores, 5 Big 5 scores, social desirability score, and baseline survey version numbers, as listed in Table 1. Strata fixed effects are included. Standard errors are robust. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table C8: The Treatment Impact of Goal Reminders Interacting with Social Desirability

	Overall Performance Index		
	(1) Full	(2) On-Time	(3) Delayed
Goal Reminders	0.029 (0.020)	0.080*** (0.027)	-0.030 (0.028)
Social desirability score	-0.000 (0.015)	-0.036* (0.021)	0.043* (0.024)
Social desirability x Reminder	0.000 (0.020)	0.038 (0.028)	-0.047* (0.028)
<i>N</i>	9615	5079	4516
<i>R</i> ²	0.026	0.036	0.022
Control mean	-0.004	-0.100	0.111
Control sd	1.039	0.988	1.081

Note: The table presents how the effects of goal reminder on the standardized outcome index vary by farmer promoters' social desirability. Additional controls include motivational message randomization, farmer promoters' age, gender, education level, elected method, experience as farmer promoters, years lived in the village, and baseline survey version numbers, as listed in Table 1. Strata fixed effects are included. Standard errors are robust. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table C9: The Impact of Goal Reminders on Task Completion Quality and Non-Goal-Setting Tasks

	Demonstration Plot	Individual Tree		Consolidated Land Tree	
	(1) Practice adoption score	(2) # of farmers picked up	(3) # of trees picked up	(4) # of farmers planted	(5) # of trees planted
Goal Reminders	0.006 (0.006)	-0.730 (1.462)	-1.551 (12.544)	1.512 (1.301)	-52.470 (157.840)
<i>N</i>	1766	6298	6850	6238	642
<i>R</i> ²	0.018	0.010	0.006	0.003	0.055
Control mean	0.787	114.262	1191.440	41.453	3017.303
Control std dev	0.132	57.679	570.190	53.058	2178.653

Note: The table presents how the effect of goal reminders on work quality and activities that have not been set goals. Additional controls include motivational message randomization, farmer promoters' age, gender, education level, elected method, experience as farmer promoters, years lived in the village, 6 STPS scores, 5 Big 5 scores, social desirability score, and baseline survey version numbers, as listed in Table 1. Strata fixed effects are included. Standard errors are robust. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table C10: The Role of Goal Magnitude (On-Time Sample)

	# of Farmers Registered				# of Farmers Trained				# of Trainings Held			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Goal Reminders	-4.712	0.271	6.283	-5.752	-1.132	3.551*	4.969**	2.183	-0.112	0.252***	0.107	0.259
	(8.027)	(6.097)	(5.226)	(4.939)	(1.890)	(2.116)	(2.077)	(2.088)	(0.269)	(0.095)	(0.112)	(0.161)
<i>N</i>	421	429	484	469	1070	1049	1101	1142	518	1922	1200	730
<i>R</i> ²	0.104	0.105	0.086	0.058	0.060	0.072	0.047	0.044	0.074	0.014	0.022	0.071
Control mean	97.739	94.668	82.959	77.305	60.237	59.964	58.197	54.955	3.942	3.540	3.709	3.499
Control sd	67.576	66.036	59.686	54.792	33.740	34.314	33.032	33.090	2.262	1.969	2.259	1.889
Goal magnitude	0.875	1.172	1.443	2.803	0.827	1.177	1.513	2.880	0.672	1.000	1.381	2.102

Note: The table reports the effect of goal reminders on performance using the on-time sample. Outcomes are winsorized at the 99% level. Farmer promoters are divided into goal ambition quartiles. Additional controls include motivational message randomization, farmer promoters' age, gender, education level, elected method, experience as farmer promoters, years lived in the village, 6 STPS scores, 5 Big 5 scores, social desirability score, and baseline survey version numbers, as listed in Table 1. Strata fixed effects are included. Standard errors are robust. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table C11: The Role of Goal Magnitude (Delayed Sample)

	# of Farmers Registered				# of Farmers Trained				# of Trainings Held			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Goal Reminders	4.052 (3.390)	1.133 (2.241)	0.093 (2.343)	-0.211 (2.845)	-1.124 (2.218)	1.370 (2.025)	-0.802 (2.163)	1.652 (2.719)	-0.699*** (0.196)	-0.078 (0.091)	0.122 (0.141)	-0.203 (0.192)
<i>N</i>	1873	1914	1975	1664	1150	1156	1186	1070	566	2065	1249	682
<i>R</i> ²	0.029	0.031	0.031	0.034	0.058	0.055	0.046	0.028	0.062	0.014	0.024	0.032
Control mean	106.548	101.425	96.096	88.336	65.235	62.852	62.470	61.457	4.405	3.806	3.915	4.069
Control sd	65.516	57.896	55.727	55.627	37.395	36.770	36.578	36.162	2.823	2.309	2.274	2.568
Goal magnitude	0.881	1.168	1.436	2.607	0.836	1.175	1.510	2.831	0.670	1.000	1.385	2.111

Note: The table reports the effect of goal reminders on performance using the delayed sample. Outcomes are winsorized at the 99% level. Farmer promoters are divided into goal ambition quartiles. Additional controls include motivational message randomization, farmer promoters' age, gender, education level, elected method, experience as farmer promoters, years lived in the village, 6 STPS scores, 5 Big 5 scores, social desirability score, and baseline survey version numbers, as listed in Table 1. Strata fixed effects are included. Standard errors are robust. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table C12: Comparisons of Baseline Characteristics among Farmer Promoters

	Mean (SD)	Coefficient (SE)	N. of Observations
	(1)	(2)	(3)
	Ineffective goals	Effective goals	
Age	47.9 (10.1)	-0.352** (0.172)	15,639
Experience FP (yr)	6.961 (3.471)	0.063 (0.058)	15,639
Live in village (yr)	36.2 (17.8)	0.358 (0.299)	15,639
Male	0.780 (0.414)	-0.015** (0.007)	15,639
Scarcity (STPS)	0.005 (0.987)	0.017 (0.017)	15,639

Note: This table compares the baseline characteristics that are the top five predictors of the random forest model between farmer promoters who set ineffective goals vs who set effective goals. Standard errors are clustered at the farmer promoter level. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table C13: Descriptive Statistics on Farmer Promoters' Characteristics by Their Goal Ambition Levels

Variable	(1) Q1		(2) Q2		(3) Q3		(4) Q4		(2)-(1) Mean difference	(3)-(1) Pairwise t-test		(4)-(1)		
	N/Clusters	Mean/(SD)	N/Clusters	Mean/(SD)	N/Clusters	Mean/(SD)	N/Clusters	Mean/(SD)		N/Clusters	Mean difference	N/Clusters	Mean difference	
Age	6169 4621	48.053 (12.891)	9409 6697	47.555 (13.000)	7833 5747	46.674 (12.079)	6339 4683	46.676 (12.627)	15578 8470	-0.499***	14002 8367	-1.380***	12508 7750	-1.377***
Male	6173 4623	0.780 (0.520)	9417 6701	0.774 (0.540)	7836 5750	0.779 (0.524)	6342 4685	0.788 (0.511)	15590 8475	-0.006	14009 8372	-0.001	12515 7753	0.009
Completed primary education	6173 4623	0.838 (0.462)	9417 6701	0.853 (0.452)	7836 5750	0.859 (0.440)	6342 4685	0.839 (0.466)	15590 8475	0.015**	14009 8372	0.021***	12515 7753	0.000
FP elected	6173 4623	0.960 (0.243)	9417 6701	0.959 (0.250)	7836 5750	0.955 (0.258)	6342 4685	0.943 (0.298)	15590 8475	-0.001	14009 8372	-0.004	12515 7753	-0.017***
Experience as FP (yr)	6173 4623	6.927 (4.370)	9417 6701	6.883 (4.471)	7836 5750	6.732 (4.341)	6342 4685	6.492 (4.529)	15590 8475	-0.045	14009 8372	-0.196***	12515 7753	-0.435***
Live in village (yr)	6173 4623	35.307 (22.516)	9417 6701	35.530 (22.106)	7836 5750	34.562 (21.053)	6342 4685	34.381 (21.763)	15590 8475	0.223	14009 8372	-0.745**	12515 7753	-0.926***
Reciprocity score (STPS)	6173 4623	0.012 (1.263)	9417 6701	0.017 (1.249)	7836 5750	-0.011 (1.282)	6342 4685	-0.018 (1.361)	15590 8475	0.005	14009 8372	-0.023	12515 7753	-0.029
Scarcity score (STPS)	6173 4623	-0.015 (1.211)	9417 6701	0.030 (1.276)	7836 5750	0.014 (1.283)	6342 4685	-0.043 (1.314)	15590 8475	0.045***	14009 8372	0.029	12515 7753	-0.028
Authority score (STPS)	6173 4623	0.006 (1.251)	9417 6701	0.016 (1.247)	7836 5750	-0.007 (1.303)	6342 4685	-0.008 (1.277)	15590 8475	0.010	14009 8372	-0.013	12515 7753	-0.014
Commitment score (STPS)	6173 4623	-0.028 (1.323)	9417 6701	0.026 (1.237)	7836 5750	0.006 (1.266)	6342 4685	-0.007 (1.329)	15590 8475	0.053***	14009 8372	0.034*	12515 7753	0.021
Consensus score (STPS)	6173 4623	-0.021 (1.275)	9417 6701	0.040 (1.263)	7836 5750	-0.020 (1.284)	6342 4685	-0.019 (1.284)	15590 8475	0.061***	14009 8372	0.001	12515 7753	0.002
Liking score (STPS)	6173 4623	0.024 (1.196)	9417 6701	0.014 (1.275)	7836 5750	-0.009 (1.301)	6342 4685	-0.031 (1.324)	15590 8475	-0.010	14009 8372	-0.033*	12515 7753	-0.055***
Extraversion score (Big 5)	6173 4623	0.011 (1.258)	9417 6701	0.005 (1.291)	7836 5750	0.014 (1.221)	6342 4685	-0.033 (1.304)	15590 8475	-0.006	14009 8372	0.004	12515 7753	-0.044**
Agreeableness score (Big 5)	6173 4623	-0.019 (1.268)	9417 6701	0.027 (1.267)	7836 5750	0.002 (1.257)	6342 4685	-0.027 (1.295)	15590 8475	0.046***	14009 8372	0.021	12515 7753	-0.008
Neuroticism score (Big 5)	6173 4623	-0.028 (1.231)	9417 6701	-0.005 (1.263)	7836 5750	0.009 (1.288)	6342 4685	0.008 (1.280)	15590 8475	0.023	14009 8372	0.037**	12515 7753	0.036*
Conscientiousness score (Big 5)	6173 4623	-0.003 (1.238)	9417 6701	-0.000 (1.318)	7836 5750	0.010 (1.259)	6342 4685	-0.002 (1.267)	15590 8475	0.003	14009 8372	0.014	12515 7753	0.001
Openness score (Big 5)	6173 4623	-0.023 (1.338)	9417 6701	0.016 (1.264)	7836 5750	0.020 (1.230)	6342 4685	-0.031 (1.248)	15590 8475	0.039**	14009 8372	0.043**	12515 7753	-0.007
Social desirability score	6173 4623	-0.037 (1.238)	9417 6701	0.035 (1.259)	7836 5750	-0.012 (1.267)	6342 4685	-0.018 (1.281)	15590 8475	0.071***	14009 8372	0.025	12515 7753	0.019
Baseline survey version	6173 4623	1.874 (1.148)	9417 6701	1.995 (1.431)	7836 5750	1.721 (1.182)	6342 4685	1.820 (1.371)	15590 8475	0.121***	14009 8372	-0.153***	12515 7753	-0.054***
Number of farmers registered	6173 4623	127.407 (126.612)	9417 6701	107.364 (91.782)	7836 5750	101.663 (86.777)	6340 4684	88.256 (87.625)	15590 8475	-20.043***	14009 8372	-25.744***	12513 7752	-39.151***
Number of trainings held	6153 4603	4.235 (3.291)	9403 6687	3.564 (2.149)	7822 5736	3.444 (2.063)	6328 4671	3.247 (2.027)	15556 8441	-0.670***	13975 8338	-0.790***	12481 7719	-0.988***
Number of farmers trained	6149 4599	71.629 (63.067)	9393 6677	62.813 (48.865)	7818 5732	58.002 (42.407)	6317 4660	47.888 (39.283)	15542 8427	-8.817***	13967 8330	-13.627***	12466 7704	-23.741***
F-test of joint significance (P-value)										0.000***		0.000***		0.000***
F-test, number of observations										15530		13960		12457
F-test, number of clusters										8422		8325		7700

Note: This tables shows how farmer promoters characteristics vary across goal ambitions. The analysis sample includes the three goals set in baseline survey for each farmer promoter. Strata fixed effects are included. Standard errors are clustered at farmer promoter level. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table C14: Confusion Matrix of the Random Forest Model

True goal types	Predicted goal types		Total
	Ineffective goals	Effective goals	
Ineffective goals	1,255	2,065	3,320
Effective goals	1,475	3,024	4,499
Total	2,730	5,089	7,819

Note: This tables shows the confusion matrix of the validation sample of the random forest model, which aims to predict which farmer promoters set effective goals. The analysis sample includes the three goals set in baseline survey for each farmer promoter.

Table C15: Classification Report of the Random Forest Model

True goal types	Precision	Recall	F-1	Support
Ineffective goals	0.460	0.378	0.415	3,320
Effective goals	0.594	0.672	0.631	4,499
Macro average	0.527	0.525	0.523	
Weighted average	0.537	0.547	0.539	

Note: This tables shows the classification report of the validation sample of the random forest model, which aims to predict which farmer promoters set effective goals. The analysis sample includes the three goals set in baseline survey for each farmer promoter.

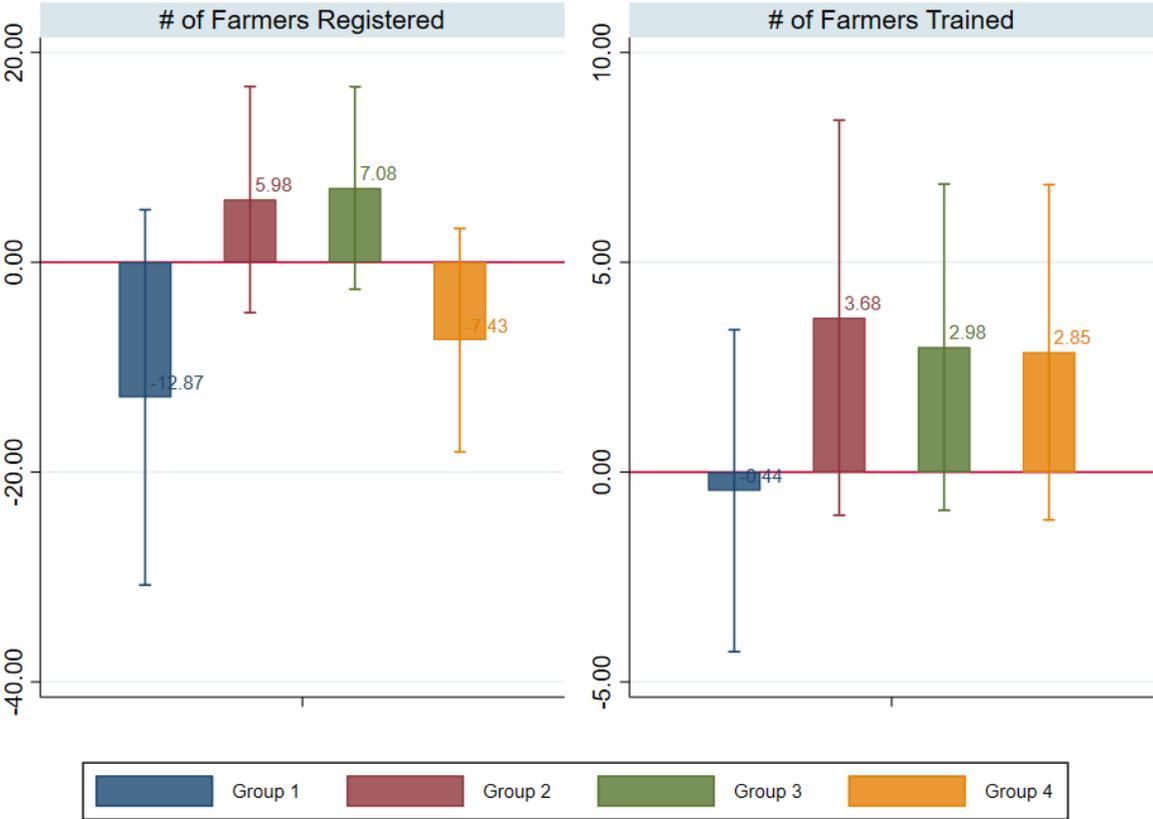
Table C16: The Impact of “Goal Effectiveness” on Performance (IV Second Stage)

	# of Farmers Registered	
	(1)	(2)
Goal on # of farmers registered	0.095 (0.275)	
Set effective goals on # of farmers registered		7.685 (19.759)
<i>N</i>	5051	4949
<i>R</i> ²	0.357	0.340
<i>F</i> -statistics	12.462	26.001
Control mean	98.525	99.035
Control sd	61.701	61.693

Note: The table presents the 2SLS estimates using the random order of questions as instruments for (1) goal magnitude and (2) effective goal dummy indicator. Additional controls include number of farmers registered in the previous year, motivational message randomization, farmer promoters’ age, gender, education level, elected method, experience as farmer promoters, years lived in the village, 6 STPS scores, 5 Big 5 scores, and social desirability score, as listed in Table 1. Strata fixed effects are included. Standard errors are robust. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

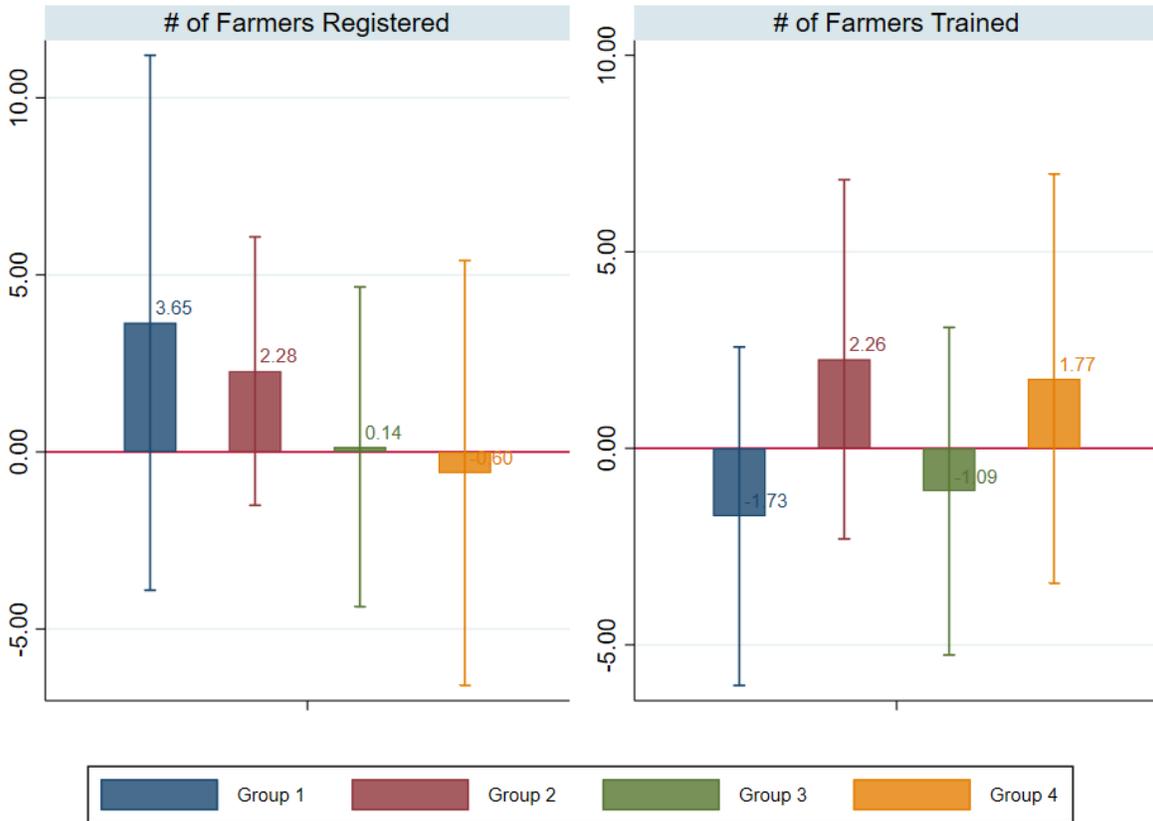
D Extra Figures and Tables for Responding to Michael's Comments

Figure D1: The Role of Goal Magnitude (On-Time Sample)



Note: The figure reports the effect of goal reminders on self-reported outcomes of the on-time sample. For each outcome, analyses are conducted with four samples, defined by farmer promoters' goal ambition group - the ratio between self-set goal magnitude and self-reported performance in the previous year. Group 1, 2, 3, and 4 refer to ratios smaller or equal to 1, larger than 1 but smaller or equal to 1.25, larger than 1.25 but smaller or equal to 1.75, and larger than 1.75, respectively. Outcomes are winsorized at the 99% level. Bars and numbers stand for point estimates of treatment impact and capped spikes stand for the 95% confidence interval.

Figure D2: The Role of Goal Magnitude (Delayed Sample)



Note: The figure reports the effect of goal reminders on self-reported outcomes of the delayed sample. For each outcome, analyses are conducted with four samples, defined by farmer promoters' goal ambition group - the ratio between self-set goal magnitude and self-reported performance in the previous year. Group 1, 2, 3, and 4 refer to ratios smaller or equal to 1, larger than 1 but smaller or equal to 1.25, larger than 1.25 but smaller or equal to 1.75, and larger than 1.75, respectively. Outcomes are winsorized at the 99% level. Bars and numbers stand for point estimates of treatment impact and capped spikes stand for the 95% confidence interval.

When we don't control for last year's performance, we only get a significant first stage for the first outcome (e.g., subsidized inputs). Also, the self-reported last year's performance of the second and third outcomes vary with the treatment. If we ask first about the goals, people give lower previous year performances. It is problematic. Thus, for the IV analysis, we focus on the first outcome.

Table D1: The Impact of Question Order on Goal Magnitude

	# of Farmers Registered		# of Farmers Trained		# of Trainings Held	
	(1)	(2)	(3)	(4)	(5)	(6)
Ask previous performance first	-5.708*** (2.106)	-4.968*** (1.535)	-1.509 (1.345)	-7.492*** (0.984)	0.009 (0.060)	-0.268*** (0.038)
# of Farmers Registered (BL)		0.793*** (0.012)				
# of Farmers Trained (BL)				0.761*** (0.017)		
# of Trainings Held (BL)						0.667*** (0.016)
<i>N</i>	5330	5328	5330	5210	5330	5241
<i>R</i> ²	0.034	0.606	0.045	0.427	0.023	0.459
Control mean	134.278	134.283	83.459	83.822	4.015	4.018
Control sd	83.431	83.447	48.312	48.229	1.864	1.862
Include covariates	Y	Y	Y	Y	Y	Y
Include baseline value	N	Y	N	Y	N	Y

Note: The table reports the effect of being asked about the goal first on FPs' self-reported goal levels. Additional controls include FPs' age, gender, education level, elected method, experience as FP, years lived in the village, 6 STPS scores, 5 Big 5 scores, social desirability score. Fixed effects at the randomization stratification block level are included. Robust standard errors are in parentheses. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table D2: The Impact of Question Order on Magnitude of Last Year Performance

	(1)	(2)	(3)
	# of Farmers Registered	# of Farmers Trained	# of Trainings Held
Ask previous performance first	-0.899 (2.080)	7.524*** (1.181)	0.392*** (0.058)
<i>N</i>	5335	5210	5243
<i>R</i> ²	0.028	0.045	0.036
Control mean	107.274	62.294	3.572
Control sd	80.729	40.101	1.885
Include covariates	Y	Y	Y
Include baseline value	Y	Y	Y

Note: The table reports the effect of being asked about the goal first on FPs' self-reported last year's performance. Additional controls include FPs' age, gender, education level, elected method, experience as FP, years lived in the village, 6 STPS scores, 5 Big 5 scores, social desirability score. Fixed effects at the randomization stratification block level are included. Robust standard errors are in parentheses. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table D3: Correlation between the Timing of Farmer Promoters' Work and The Magnitude of Farmer Promoters' Goals

	(1)	(2)	(3)
	Received input goal reminders on time	Received demo. plot goal reminders on time	Received demo. plot goal reminders on time
Goal magnitude: # of Farmers Registered	0.013** (0.005)		
Goal magnitude: # of Farmers Trained		0.007 (0.004)	
Goal magnitude: # of Trainings Held			0.019* (0.011)
Goal Reminders	-0.012* (0.007)	-0.006 (0.010)	-0.006 (0.010)
Motivation SMS	0.005 (0.009)	-0.002 (0.012)	-0.003 (0.012)
<i>N</i>	9234	8945	8946
<i>R</i> ²	0.001	0.000	0.000
Control mean	0.202	0.493	0.493

Note: Fixed effects at the randomization stratification block level are included. Robust standard errors are in parentheses. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.