

**KRISHI KATHA: PROVIDING A TWO-WAY CUSTOMIZED MOBILE PHONE-BASED EXTENSION SERVICE TO SMALLHOLDER FARMERS**

**IVR service** PAD and ADMI are piloting a **mobile phone-based extension system to service 10,000 farmers in West Bengal**. Branded *Krishi Katha*, this service provides information on crop management, irrigation management and fisheries to strengthen the Department's extension system and improve farmer livelihoods. *Krishi Katha* delivers weekly two-minute voice messages tailored to crop and weather cycles that provide advice and recommendations to farmers. Farmers can also access a toll-free helpline where they can ask questions (answered by experts within 48 hours), review previous weekly advisory messages, listen to the frequently asked questions of other farmers, and access their own history of questions.

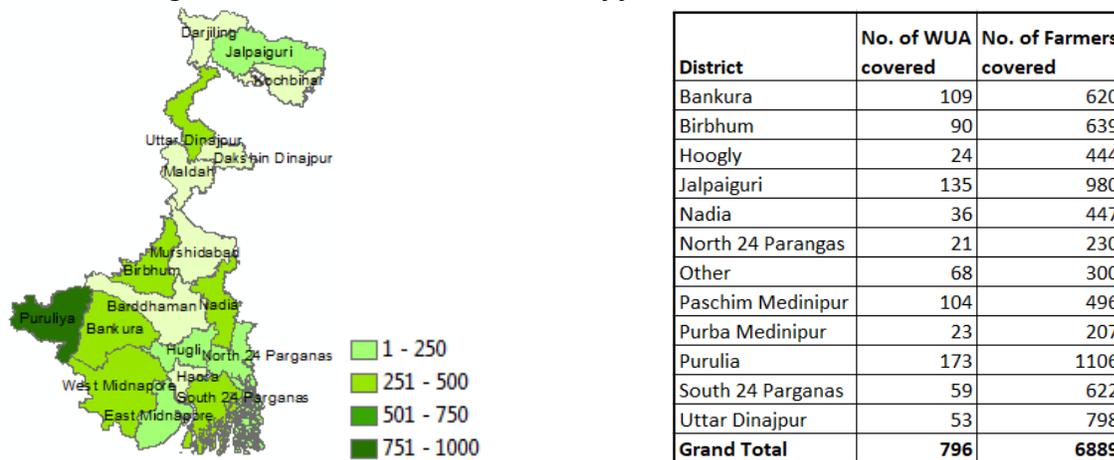
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**PROJECT OVERVIEW-** Precision Agriculture for Development India Foundation (PADIF) is working with the West Bengal Accelerated Development of Minor Irrigation Project (WBADMIP or abbreviated as "ADMI") on a pilot to implement a **mobile phone-based extension system for 10,000 farmers across West Bengal**. This service, branded *Krishi Katha*, provides information on crop management, irrigation management and fisheries with the goal of strengthening the Department's extension machinery and augmenting farmer livelihoods. Participating farmers belong to Water User Associations (WUAs), with roughly 8 farmers per WUA on-boarded onto the service in the selected 10 districts. As part of this service, farmers receive a weekly two-minute long voice message providing advice and recommendations based on crop and weather cycles. Additionally, farmers can give a missed call to access a toll-free helpline where they can ask questions (answered by experts in 24 to 48 hours), review previous weekly advisory messages, listen to frequently asked questions by other farmers, and access their own history of questions.

**CONTENT-**From the inception of the project (since May 2019), PADIF has sent advisory on 40 different topics including paddy, **oilseeds, vegetables and fisheries**. Of the total crop-related advisories sent out, **64% focus on paddy, 32% on vegetables and 4% on groundnut**. On irrigation management, advisory focused on water management to prevent disease occurrence post-monsoon, using Indian Meteorological Department (IMD) weather forecasts to design **customized district-level advisory** to prevent over-irrigation, and planting crops after the paddy crop cycle to conserve soil moisture. PADIF also sent out **fisheries advisory to a sub-sample of farmers**. PADIF is also working with **ADMI's GIS experts** to conduct **ground-truthing of their soil moisture calibration model** using tensiometers - this model will be used to **time the roll-out of advisory for the Rabi season with the on-ground water situation**.

**FARMER ENGAGEMENT-** As of the end of October 2019, roughly **7,000 farmers across 10 districts are active on the Krishi Katha service**. In order to provide customized agricultural advice to farmers (making it different from generic messages distributed to farmers), PADIF collected detailed profiles of farmers.

Figure 2: District-wise distribution of farmers on the Krishi Katha service



**Descriptive details of farmers on the Krishi Katha service:** The average land size cultivated by Krishi Katha farmers is 2.5 acres. Most farmers (~99%) grow paddy as their main Kharif crop. For the secondary crop, 90% of the farmers grow vegetables mainly brinjal (45%) and okra (37%). Their average age is 40 years with a household size of 6. Only 7% of primary users are women while 33% of farmers own smartphones - a potential pathway for diversifying how information is shared.

**Collaboration with ADMI's district teams:** PADIF conducted extensive capacity building sessions in district offices with ADMI personnel (district officers, agriculture specialists and community workers).

Figure 3. Images from field training activities conducted in districts



Farmer questions were shared and answers were disseminated through extension workers via a WhatsApp group with PADIF and ADMI extension workers. This helped: 1) create ownership towards Krishi Katha and 2) ensured synergy in the content being shared by ADMI and Krishi Katha.

**Engagement with the outbound service:** On average, farmers pick up 77.5% of the weekly advisory calls, and this pick-up rate has stayed relatively constant throughout the season. Among those that pick-up, on average, farmers listen to 67% of the message. At the end of a message, farmers can rate the messages on a scale of 1 to 5 (with 5 being excellent). Among the 25% of farmers that provide a rating, the average rating for content is 3.8 out of 5.

**Engagement with the inbound service:** Around 3,000 farmers (~45% of users) made a total of 7,600 calls into the inbound service. 50% of farmers calling in were repeat callers, while the average duration of a call was 160 seconds. Of the roughly 500 questions asked, pest & disease management (62%) is the most popular topic. Q&A content is also shared with ADMI officials through a real-time library

### MONITORING AND EVALUATION

**Farmer Feedback Surveys:** PADIF conducts weekly feedback surveys with users selected from across districts. Feedback reveals high levels of satisfaction among farmers: On average, surveyed farmers rate the usefulness of advice 4.6 out of 5. 83% state that they would recommend the service to their friends and family. 48% of farmers report adopting advice while 30% of farmers report sharing advisory with others, indicating a potentially larger indirect reach.

**A/B Testing: Evaluating the impact of the service on farmer behavior and knowledge:** As part of our commitment to the evidence-led approach, we conducted an A/B test with 433 WUAs (2,772 farmers) across 10 districts to test (i) whether access to the Krishi Katha service affects agricultural knowledge and adoption of recommended practices and (ii) whether reminder and instructional messages on how to use the service could increase usage. WUAs in the study were randomly assigned to one of these groups:

- Control - Access to the helpline only (95 WUAs and 609 farmers).
- Treatment 1 - Access to the helpline and weekly advisory messages (172 WUAs and 1,085 farmers).
- Treatment 2 - Access to the helpline and weekly advisory messages, plus intensive training and motivational messages (166 WUAs and 1,078 farmers). Treatment 2 farmers received the following interventions: 1) training on how to use the service, 2) broadcasting questions asked by farmers along with the answers to other farmers in the region to illustrate how the Q&A feature can be used 3) sharing encouragement messages from WUA secretaries, and 4) reminder messages to encourage farmers to call in to the service.

**Preliminary results:** Preliminary analysis suggests that the two treatments were effective in increasing successful usage of the helpline. Weekly advisory messages (Treatment 1) doubled the likelihood of a farmer calling into the system and successfully accessing agricultural information or recording a question. Additional reminder and instructional voice messages on how to use the system (Treatment 2) increased the magnitude of these effects significantly. Next, we will conduct a phone survey to assess whether increased usage of Krishi Katha leads to improved agricultural knowledge and practices.

### Farmer Testimonials



"I know about Krishi Katha. They called from Kolkata office and explained the service. It has been useful to us solving our major fisheries problems. Before this, I used to go to other people to clear my doubts but now I have a reliable source of information that too sitting in my home. I have been following the advice since a few months and now I can see it as a profitable business and not just to feed my family. I am quite happy with the service and would like to recommend it to everyone"

- Anjana Mandi (FIG member, Gokulnagar Pally Unnayan WUA, Purulia



"I know about Krishi Katha. It has been useful to me as I got to know the best way to use pesticides and other insecticides. I have also used the seed processing advice in my farm. Since I am the secretary of a WUA, I ask all my *samiti* members to spare some time and give a missed call to the toll-free number. I could save my crop from an insect attack and thus made good profit due to the timely advice from Krishi Katha. "

-Tarasankar Mandal, Secretary, Laljore Mahananda SFMIS 6 WUA, Birbhum.

**Conclusion-** As we conclude this initial pilot in December 2019, PADIF looks forward to continuing to work with the WBADMIP team to maintain the Krishi Katha service into 2020 and beyond, expand it to reach more farmers and WUAs, expand the advisory content, continue to experiment and iterate the service to increase its impact on farmers' livelihoods, and identify funding sources to make this service sustainable in the long term. We would also appreciate the opportunity to work with WBADMIP to conduct a rigorous evaluation of the Krishi Katha service to measure its impact on farmer outcomes such as adoption of recommended practices, comprehension of agronomic recommendations, crop and livestock yields, and net incomes.

**Description of PAD-** Optimizing agricultural practices and yields requires the deliberate application of methods and inputs customized to local conditions. A majority of the world's 500 million smallholder farmers receive little quality agricultural advice, contributing to poor agricultural productivity and low incomes. Harnessing technology, data science, and behavioral economics, PAD provides timely, customized, and actionable information that empowers smallholder farmers to improve agricultural practices and address climate-related challenges. Our services deliver voice and SMS messages to 2.9 million farmers in seven countries, including India. PAD provides mobile phone-based extension services to over six lakh farmers across six states in India, including West Bengal.