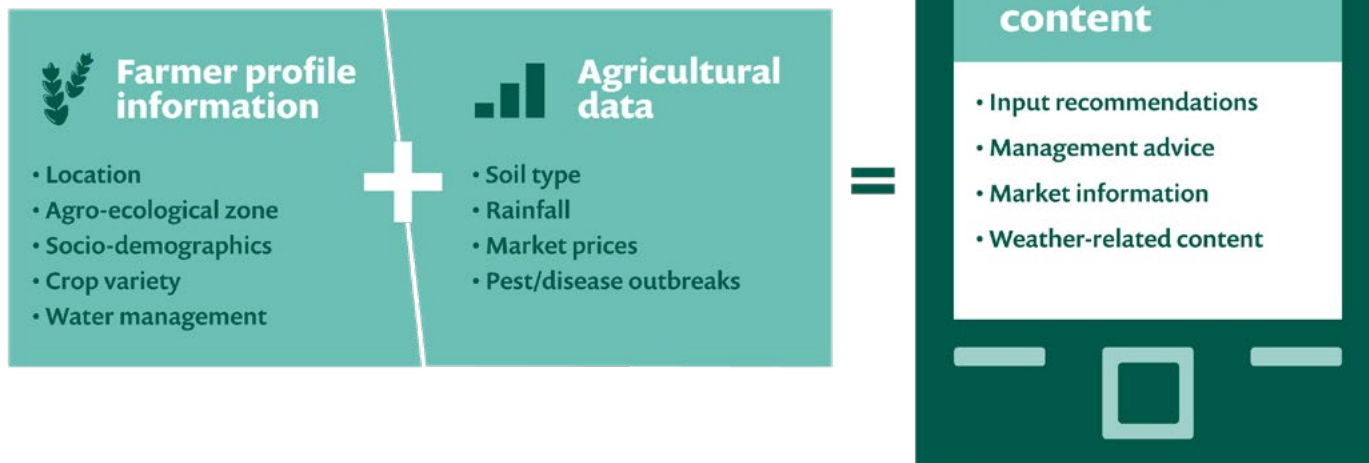# PxD
PRECISION DEVELOPMENT

Precision Development (PxD) is a global non-profit organization that harnesses technology, data science, and behavioral economics to empower people living in poverty to improve their lives. By providing actionable information to the right people, in the right way and at the right time, PxD empowers people to improve their livelihoods, mitigate risks, advance environmental sustainability, and adapt to a changing climate. A majority of PxDs services deliver customized digital agricultural advice to smallholder farmers via their mobile phones. This pioneering model of agricultural extension is implemented in collaboration with partner organizations to maximize scale, and we continuously experiment, iterate, and gather evidence on impact to improve service delivery and demonstrate our value. PxD currently works in ten countries in Africa, Asia, and Latin America, and is rapidly expanding as governments and organizations look for innovative ways to utilize new technologies to deliver actionable information to people who need it. At the end of Q3 2021, PxD and our partners were

Harnessing technology, data science, and behavioral economics to empower people living in poverty to improve their lives.

What we do:
Provide Quality Agricultural Advice

Farmer profile information
- Location
- Agro-ecological zone
- Socio-demographics
- Crop variety
- Water management

+

Agricultural data
- Soil type
- Rainfall
- Market prices
- Pest/disease outbreaks

=

Customized content
- Input recommendations
- Management advice
- Market information
- Weather-related content

servicing 5.2 million users through a range of initiatives providing tailored digital information on crop optimization, pest management, input utilization, and environmental stewardship. PxD also leverages mobile technology to deliver information in sectors beyond agriculture, including facilitating math education in Kenya, improving household nutrition, increasing the adoption of crop insurance and other financial services, and other interventions that advance well-being.

The issue

A majority of the world's poor work small family farms in developing countries. Households engaged in smallholder farming collectively account for more than two billion people – almost a third of humanity and two-thirds of the world's poor. An immediate and direct cause of their poverty is what is known as the yield gap: the difference between potential and actual on-farm production. Smallholder farmers typically harvest only 30 to 50 percent of what their land

can produce. Whether it is a misapplication of inputs such as fertilizer and pesticides, the use of low-quality seeds, or too much or too little water – the potential yield of these farms is not reached. Smallholder productivity and income in many instances can also be boosted through crop diversification, the adoption of new drought or flood-resistant crop varieties, or knowledge about how to combat pests and infestation. Climate change presents an additional, confounding challenge and risk, particularly for smallholders who rely on rainfed cultivation. Studies suggest that small changes in agricultural practices can substantially improve smallholder productivity and profitability and reduce the incidence of extreme poverty. Traditional agricultural extension confronts many challenges: in-person information sharing is expensive relative to its effects, contact with farmers is irregular, and advice is difficult to customize and deliver on time. Despite vast resources supporting the work of over one million agricultural extension workers, most farmers continue to lack the advice they need to close the yield gap and maximize their incomes.

We are optimistic. Today, the globe is more connected than ever before. Most people, including people living in extreme poverty, already use mobile phones. Handset ownership in developing countries ranges between 50 to 70 percent, while access to a mobile phone through a household member – ranging from 70 to 90 percent – is even higher. For the first time in history, a majority of smallholder farmers are in a position to use digital agricultural advisory services delivered to the palm of their hand. PxD leverages this opportunity to empower users with relevant and customized information, delivered at low cost, to improve on-farm practices, input utilization, pest and disease management, climate and weather resilience, environmental sustainability, and access to markets.

Our approach

PxD's approach harnesses innovations in technology and research to improve the lives of smallholder farmers. We provide a two-way flow of information that delivers customized advice to farmers through their mobile phones. PxD's unique approach to digital development consists of four components:

1. We deliver **simple** and **effective** messages that users can understand and act upon. We draw on behavioral economics to inform messaging that more effectively influences farmer behavior and social learning theory that facilitates more widespread diffusion of information across farmer networks.

2. Our systems allow us to **customize** our messaging to users to ensure that the information we provide is useful, timely, and actionable. Big data and machine learning techniques make it possible for us to tailor information at scale to conditions revealed in existing and new sources of data. These recommendations can be tailored to optimize inputs (seeds, water, fertilizers, pesticides) and management practices conditional on

geographic and temporal-specific conditions (soil types, weather, agro-ecological zone, etc.), market conditions (input and output prices and availability, etc.), and user-specific information (education, experience, risk tolerance, demographics, etc.). Our goal is to develop intelligent platforms that provide users with context-relevant and personalized agricultural recommendations through their mobile phones to improve productivity, profitability, and advance environmental sustainability.

3. Our interventions are **evidence-led**. We develop systems that are continuously monitored and constantly improving. PxD's interventions draw on the power of new research methods to improve agricultural extension. A/B testing – comparing two or more service design options to assess which is preferred or more effective – allows for near-instantaneous upgrading of content and service delivery to concurrently improve user experience and deliver more appropriate information. The use of rigorous assessment tools such as randomized controlled trials (RCTs) provide opportunities to systematically understand the impact and we feed this information back into our model to refine it over time. Mobile phones allow for the collection of large datasets from users which PxD uses for rapid experimentation and analysis to iteratively improve user experience and user-centered design.

Key Elements Differentiating PxD's Model

1 Using behavioral science and human-centered design to design actionable and customized messages and services

2 Using experiments and data science to test, iterate, and improve

3 Scale rapidly through partnerships with governments, NGOs, and private companies, while remaining free to the user

Share data and learnings transparently as public goods

4. Working through partners who are already providing services to users at scale – including governments, NGOs, and for-profit agribusinesses – allows PxD to rapidly reach scale, with extremely low customer acquisition costs and rapidly falling marginal costs per farmer per year.

Our work in Colombia

PxD's digital service "*Un mensaje por el campo*", which commenced operations in March 2021, is a component of the project 'Adopting New Technology, Mindsets, and Practices to Transform Colombia´s Agricultural Sector' which we are implementing in collaboration with Rare and The Nature Conservancy and with support from UK PACT. The service delivers advisory information to approximately 2,700 farmers located in the environmentally sensitive Meta Region of Colombia via a two-way SMS service. Advisory focusses on improving farm productivity and the promotion of Climate-Smart Agriculture (CSA) practices, such as optimized pruning, improved and sustainable pest and disease management, composting, and the prevention of soil erosion. *Un mensaje por el campo* provides customized recommendations to coffee, cocoa, and plantain farmers, and general recommendations to farmers of perennial crops. Messages are sent to coincide with decision points aligned with cropping calendars. In this way, the information is most valuable and can be made actionable at the moment they arrive. Additionally, farmers have at their disposal a "menu" where they can access all the content that has been sent to them over the course of a season. The initiative's design is based on an iterative process in which phone surveys are used to collect farmer data directly from farmers, farmers are

AUMENTA TU PRODUCTIVIDAD con PxD Un Mensaje por el Campo

WHATSAPP
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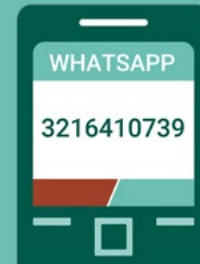
Envía un mensaje de texto o whatsapp, o deja una llamada perdida al

3216410739

para hacer parte de nuestro servicio

ÚNETE A UNA RED DE MÁS DE 5 MILLONES DE AGRICULTORES A NIVEL MUNDIAL

SERVICIO GRATUITO

Somos un servicio de mensajes de texto gratuitos, que te ayudan a aumentar tu productividad.

trained on how to use the service, customized content is designed by agronomy and project teams, and continuous analysis and experimentation are leveraged to inform decision-making and service improvements throughout the implementation process.

Our team

PxD's senior leadership team draws on years of experience working in and studying agriculture in sub-Saharan Africa and South Asia, business, development economics and behavioral economics, technology, data science, and monitoring and evaluation. PxD's board members are 2019 Nobel Laureate for Economic Sciences Michael Kremer (University of Chicago), Shawn Cole (Harvard Business School), Amrita Ahuja (Douglas B. Marshall Jr. Foundation), and Heiner Baumann (PxD). PxD is led by Chief Executive Officer Owen Barder who brings to the organization more than three decades of experience as a development practitioner, scholar, and advocate. In Latin America, our work is led by Claudia Morelos Carbajal (Latin America Regional Director) and Erika Caballero Montoya (Country Launch Manager, Colombia).