AGRICULTURAL DEVELOPMENT

OUR MISSION
Guided by the belief that every life has equal value, the Bill & Melinda Gates Foundation works to help all people lead healthy, productive lives.

In developing countries, we focus on improving people’s health and giving them the chance to lift themselves out of hunger and poverty. We focus on problems that have a major impact on people, but get too little attention and funding. Our financial resources, while significant, represent a very small fraction of the overall funding needed to improve the lives of people living in extreme poverty. We therefore advocate for policies and resources to increase opportunities for people living in the developing world.

The goal of the Agricultural Development initiative, the largest initiative in the foundation’s Global Development Program and one of the largest at the foundation, is to reduce hunger and poverty for millions of poor farm families in Sub-Saharan Africa and South Asia.

WHY AGRICULTURAL DEVELOPMENT?
Three-quarters of the world’s poorest people get their food and income from farming small plots of land—typically the size of a football field or smaller—and most of them labor under difficult conditions. They grow a diversity of local crops and must deal with unique diseases, pests, and drought, as well as unproductive soil. Their livestock are
frequently weak or sick, resulting in reduced production of eggs and milk to eat or sell. Reliable markets for their products and good information about pricing are hard to come by. Most often, government policies do not adequately serve their interests. Women are a vital part of these farms: in addition to caring for and feeding their families, they do most of the farming, but often with limited support.

The need to improve agricultural productivity is clear:

• Severe hunger and poverty affects nearly 1 billion people around the world.

• By 2050, it’s estimated that the earth’s population will reach 9 billion. Global food production will need to jump by 70 percent to 100 percent to feed these people. Rising incomes, increasingly scarce resources, and a changing climate are putting additional strains on agricultural productivity.

• Two billion people in the developing world are malnourished. Malnutrition continues to be the world’s most serious health problem and the single biggest contributor to child mortality.

The power of investing in agriculture is clear: Agricultural development is two to four times more effective at reducing hunger and poverty than any other sector.

Helping farm families grow more is the smartest way to fight hunger and poverty. It is essential to addressing the need to feed a growing population and improving their nutrition. When farmers can grow more food and earn more income, they can achieve self-sufficiency and live better lives.

Improvements in agricultural productivity create social and economic ripple effects. With increased incomes, small farmers can better feed their families, send their children to school, provide for their health, and invest in their farms. This makes their communities economically stronger and more stable.

A Short History of Agricultural Development

Over the past 200 years, nearly every part of the developed world has seen an agricultural transformation. As farming improved, so did incomes, health, and economies.

More recently, we’ve seen amazing progress in parts of the developing world. During the Green Revolution, which took place from the 1960s to the 1980s, improvements in staple crops such as maize, wheat, and rice helped double the amount of food produced, saved hundreds of millions of lives, and drove broader development throughout much of Asia and Latin America. There were also some serious unintended consequences—particularly regarding the environment—that left us with important lessons for today. But the efforts demonstrated that large-scale progress against hunger and poverty is possible.

Following this period, there was a sense that the problem of inadequate food supply had been tackled. Governments and donors shifted their attention to other concerns. From 1980 to 2004, donor countries cut the percentage of development assistance for agriculture from more than 16 percent to less than four percent. In addition, agriculture accounted for only four percent of public spending in developing countries.

The stagnation and decline in agricultural productivity was felt most throughout much of Africa and South Asia. Today, the average farmer in Sub-Saharan Africa gets just over a ton of cereal per acre, while the average Indian farmer gets about twice that, the average Chinese farmer about five times that, and the average American farmer about seven times that amount. Why is there such disparity? Farmers in other regions have tools, techniques, and resources that farmers in Africa do not.

In the last several years, the global community has begun to refocus its attention on agriculture. Rising food prices and concerns about feeding a growing population are prompting more and more organizations and governments to understand the urgency of supporting agricultural development.
OUR GOAL AND APPROACH

Our ultimate goal is to reduce hunger and poverty for millions of poor farm families in Sub-Saharan Africa and South Asia. We believe the best way to do this is by helping small farmers grow and sell more food so they can improve their nutrition, become self-sufficient, and build better lives.

To succeed over the long term, we follow these key principles:

• **We focus on small farmers.** These farm families work on small plots of land, which they often rely on for their food and income.

• **We focus on crops and livestock that are important to the rural poor in Sub-Saharan Africa and South Asia.** We also concentrate on areas where most poor farmers live and where we see the greatest opportunity to help millions of people build better lives.

• **We listen to farmers to understand the realities they face in their local areas.** We conduct research at the local and global levels to find out which solutions are most relevant and affordable for small farmers. We then partner with organizations that understand the local context and realities and are best suited to address these problems.

• **We focus on helping farmers increase their productivity while preserving and enhancing the viability of soil, water, and other natural resources.**

• **We put women at the center of our work.** In Sub-Saharan Africa and South Asia, women are vital participants on small farms but have limited support and little control over productive resources. We believe that agricultural development programs must address these gender gaps and inequalities to be truly effective.

• **We realize there is no single, simple solution to tackling the challenges farm families face.** That’s why we take a comprehensive approach to helping farmers prosper that includes developing heartier seeds, helping them get access to new tools and farm management techniques, opening doors to markets, and supporting effective policies.

• **We coordinate across our team to ensure we are getting the most out of our investments.** For example, if we are funding the development of new seeds that withstand drought, we coordinate within our team to ensure farmers learn about the benefits of these new varieties, any special growing practices, and are comfortable adopting them. We also help connect these farmers to financing and markets.

• **We work closely with others in the field to leverage our investments.** In the last several years, we have been encouraged by the growing interest and momentum to support agriculture. This is particularly timely in light

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**Why We Focus on Women Farmers**

In Sub-Saharan Africa, and South Asia, women are vital contributors to farm work, and typically in charge of selecting food for, and feeding their families. Yet compared to their male counterparts, women farmers are less productive and unable to reach their full potential. Yields on women’s plots are typically 20 percent to 40 percent less than men’s, putting rural families and communities at risk of not having enough nutritious food to eat or any extra to sell at the market.

The reason for this gender gap is that women have less access to improved seeds and other inputs, training, and markets. This gap has real consequences: households are less productive, new approaches and technologies that could increase the amount of food they grow are less likely to be adopted by women, and children in poor household are undernourished.

We believe agricultural development programs must understand and be designed for women farmers in order to effectively reduce hunger and poverty. Therefore, we’ve developed a gender-impact strategy to guide our grantmaking that includes:

• A “gender checklist” that guides the development of foundation grants from the beginning to ensure we and our partners are considering the optimal role for women

• Proposal templates to help grantees and foundation staff ensure each grant has specific and sufficient measures in place to effectively address gender

• A toolkit on best practices and approaches developed by others to design programs that target the gender gap

• Additional tools, technical assistance, and resources to help support grantees and partners from proposal design to implementation

In addition to integrating a gender-responsive approach in our agricultural development work, we also have a dozen grants that focus on the main constraints that limit the productivity of women farmers. These grants target women farmers’ lack of access to improved seeds and other inputs, the underrepresentation of women’s needs, women’s limited participation in agricultural research and development, and the importance of strengthening the role of the entire household to ensure long-term, increased productivity.
of rising food prices and the need to feed a growing population. Now more than ever, we need to align with others around the globe who are working in this sector, including funders, scientists, environmentalists, policymakers, and the private sector, to make sure we are getting the most out of our collective investments.

Our grantmaking priorities are:

- **Crop improvement**: developing crop varieties specially adapted to local conditions that have specific benefits farmers seek, such as increased yields; better nutrition; and tolerance to drought, flood, and pests.

- **Crop and natural resource management**: helping farmers better manage and protect their staple crops and livestock through soil health management; effective water resource management; and minimizing the amount of crops and livestock that are wasted due to spoilage and weeds, pests, disease, and other threats.

- **Livestock health and improvement**: enhancing the health and productivity of small farmers’ livestock, including cows, goats, and chickens, by improving animal genetics and veterinary care.

2. **Agricultural Policies**

Timely, relevant, and accurate information is crucial to the efforts of farmers. Policymakers in developing countries also need good data to inform their decision making. To this end, we support data collection, research, and policy analysis related to agricultural development, including the results of our own work. This is critical in evaluating the impact of various approaches, getting accurate information to small farmers, and assessing the effects of national policies.
and international agriculture policies. This also includes research to measure the progress of our grants to ensure they are delivering the anticipated benefits to farm families.

**Our grantmaking priorities are:**

- **Data and diagnostics:** collecting and analyzing data from farmers, development partners, and governments to help national government policymakers and other partners—as well as the foundation—assess the success of different interventions.

- **Country policies:** identifying and supporting policies and public investments that help farmers in sustainably increasing their yields, with a focus on research and development investment, seed systems, livestock enhancement, regulatory systems, input delivery, and markets.

- **Optimizing environmental, welfare and nutritional benefits, and mitigating impacts:** supporting research, evaluations, and tools to ensure our grantmaking maximizes returns to the environment and the welfare of farming households through increased agricultural productivity, and mitigating any consequences our work may have on the environment or the health of farm families.

- **Enhancing skill sets:** training individuals and organizations in Sub-Saharan Africa and South Asia to conduct research and analysis.

### 3. Access and Market Systems

We help get new and appropriate tools and farming practices into the hands of small farmers and support efforts to link them to markets.

**Our grantmaking priorities are:**

- **Input delivery:** working hand in hand with the research and development team to ensure small farmers have access to the results of our work, such as improved seeds, better soil, and water and livestock solutions.

- **Knowledge exchange:** finding new ways to share information and knowledge that help small farmers improve their farming techniques through information and communications technology, such as mobile phones.

- **Organizational strengthening:** training farmer organizations to hone their business management skills, gain greater input purchasing power and marketing leverage, and learn how to improve their crop and resource management skills.

- **Post-harvest management:** improving storage and post-harvest activities to help farmers get the most from selling their crops.

- **Markets:** improving the ability of farmers to meet quality and quantity commitments for buyers; linking farmers with large-scale and reliable markets; and facilitating partnerships between buyers, processors, and farmer organizations.

### Factoring the Environment into Grantmaking

We are focused on helping farm families increase their yields while preserving and enhancing natural resources over the long term. This is critical if we are to ensure the ongoing viability of the resources on which small farmers depend for their food and livelihoods, and achieve our programmatic goals of sustainable productivity growth.

Our methodology guides foundation staff and potential grantees through a process to evaluate and plan for the potential environmental impacts of the foundation’s grantmaking, and includes:

- Identifying a grant’s potential environmental impact on natural resources, including water, soil, biodiversity, air, and climate. For example:
  - Will this grant affect surface water availability or quality?
  - Will this grant affect soil health?
  - Will this grant protect or harm species diversity?

- Developing interventions to mitigate the negative impacts of the grant and ways to enhance the positive impact. For example:
  - A grantee’s work is increasing the productivity of yams. The additional yield requires extra staking to hold up the highly productive plants. This could pose a threat to the nearby forest, where limbs are cut to fortify the plants. The grantee establishes a system to monitor the potential impacts on the forest, and initiates work to develop yam varieties that are low to the ground and don’t require staking.

- Creating a new and innovative monitoring system to evaluate environmental impacts. This brings to light any potential problems and builds in the ability to change approaches if necessary.

- Integrating staffing or funding into the grant that will enable the grantee to implement risk mitigation and enhancement strategies outlined during the grant development process.
Odetta Mukanyiko, a small farmer in Rwanda, is selling her maize crop directly to the World Food Program’s Purchase for Progress initiative, which is helping link farmers to markets (Kirehe District, Rwanda, 2011).

Improving Data on Agriculture to Improve Investments

Understanding the small farmer in the developing world—where she lives, what she grows, and how much she earns, as well as broader questions about what role agriculture plays in the larger economy—is critical to helping us meet our goal of reducing hunger and poverty for farm families. Unfortunately, data on agriculture and the status of agricultural households is either lacking or of very poor quality. The problem is most acute in Sub-Saharan Africa, where much of what we know is based on generalizations from small surveys conducted sporadically. Improving the availability and quality of agricultural data is crucial for better targeting and prioritizing investments in agricultural development from both developing countries and donors.

Accurate data is critical to government decision makers. For example, throughout much of the 1980s and 1990s, data indicated a declining trend in the number of global poor. Consequently, governments reduced their development aid for agriculture. A more accurate assessment of the situation in 2008 revealed that the number of absolute poor continued to be stubbornly high throughout this period, especially in Sub-Saharan Africa and South Asia.

We invest in a range of efforts to improve agricultural data—from collecting better data at the household and national levels to building web-based platforms that compile and disseminate data. We are also strengthening the ability of researchers around the world to conduct this work. Because collecting data is complicated and time consuming, we are looking at how we can use advanced approaches, such as capturing data using aerial photography and other remote sensing technologies and using geographic information systems to improve the breadth and quality of agricultural data. Here are a few highlights from our portfolio.

- **Living Standards and Measurement Survey**
  This grant is collecting detailed information from 25,000 households in seven countries across Sub-Saharan Africa. This survey, which is looking at data over six years, will provide crucial information on the impact of ours, and others’ investments in agriculture.

- **COUNTRYSTAT**
  This project is developing web-based data platforms in 17 countries across Sub-Saharan Africa to broadly disseminate national and sub-national statistics and household data.

- **Agricultural Science and Technology Indicators Database**
  This database provides detailed information on investments and infrastructure for agricultural research and development in Sub-Saharan Africa.
GRANTS
As of June 2011, we have committed more than $1.8 billion to agricultural development efforts.

Following are the five largest grants we’ve made in these grantmaking areas since our inception.

### RESEARCH AND DEVELOPMENT

<table>
<thead>
<tr>
<th>GRANTEE</th>
<th>PROJECT NAME</th>
<th>PURPOSE</th>
<th>GRANT AMOUNT (U.S.)</th>
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<tbody>
<tr>
<td>AGRA</td>
<td>AGRA Program for African Seed Systems (PASS)</td>
<td>This project links training and support to national breeding programs that use conventional breeding with investment in private sector seed production and distribution to provide access to seed of new crop varieties to small farmer in 13 Sub-Saharan African countries.</td>
<td>$100 million</td>
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<tr>
<td>International Food Policy Research Institute (IFPRI)</td>
<td>HarvestPlus II</td>
<td>This project continues to support development and delivery of biofortified staple crops, including maize, sweet potato, beans, millet, cassava, rice, and wheat, to reduce micronutrient deficiencies in developing countries. This phase of work focuses on crop improvement, nutrition retention, and efficacy studies, collaborating with institutions. A portion of this grant funds research that uses transgenic approaches.</td>
<td>$45 million</td>
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<tr>
<td>African Agricultural Technology Foundation (AATF)</td>
<td>Water Efficient Maize for Africa (WEMA)</td>
<td>This project seeks to develop drought-tolerant maize varieties to benefit smallholder African farmers in five countries. A portion of this grant funds research that uses transgenic approaches. (Monsanto is a subcontractor to AATF on this grant.)</td>
<td>$39.1 million</td>
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<tr>
<td>Centro Internacional de Mejoramiento de Maiz y Trigo (CIMMYT)</td>
<td>Drought Tolerant Maize for Africa—Phase II</td>
<td>This project seeks to help small farmers increase maize productivity by breeding drought-tolerant maize varieties in 13 Sub-Saharan African countries.</td>
<td>$33.3 million</td>
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<tr>
<td>Cornell University</td>
<td>Durable Rust Resistance in Wheat (DRRW), Phase II</td>
<td>This grant works to protect poor farmers in vulnerable regions by developing improved rust resistant wheat varieties, funding planning and advocacy efforts, investigating different approaches to durably protecting wheat plants from rust diseases, and supporting disease screening facilities in Kenya and Ethiopia. A portion of this grant uses transgenic techniques as a research tool.</td>
<td>$26.8 million</td>
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### AGRICULTURAL POLICIES

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<tr>
<td>International Bank for Reconstruction and Development (IBRD)</td>
<td>Global Agriculture and Food Security Program (GAFSP)</td>
<td>This grant contributes to a global trust fund that supports efforts to improve agricultural productivity and food security in the developing world.</td>
<td>$30 million</td>
</tr>
<tr>
<td>International Bank for Reconstruction and Development (IBRD)</td>
<td>Living Standards and Measurement Study (LSMS)—Integrated Surveys in Agriculture</td>
<td>This project supports the collection of high-quality, nationally representative, multistopic household panel surveys in six Sub-Saharan African countries. The surveys are implemented by African statistics offices and include information on agricultural production and household welfare.</td>
<td>$19.4 million</td>
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<tr>
<td>AGRA</td>
<td>AGRA Policy Hubs</td>
<td>This program identifies key policy constraints, devises solutions to policy bottlenecks, and mobilizes support for regulatory and legislative reform in Mozambique, Tanzania, Ghana, Mali, and Ethiopia.</td>
<td>$15 million</td>
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<tr>
<td>International Centre for Research on Agroforestry (ICRAF)</td>
<td>AWARD Fellowship Program</td>
<td>This is a professional development program that strengthens the research and leadership skills of African women in agricultural science, empowering them to contribute more effectively to poverty alleviation and food security in Sub-Saharan Africa.</td>
<td>$13.9 million</td>
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AGRA
In 2004, then-United Nations Secretary-General Kofi Annan addressed a group of African leaders, adding his voice to their call for “a uniquely African Green Revolution.” Today, he is helping lead AGRA—an Africa-based, African-led effort to help revitalize agriculture on the continent.

Formed in 2006, AGRA works to bring value to the agricultural space by funding projects that help illustrate to farmers the benefits of new approaches and tools, drive innovation, and encourage collaboration with partners from government, business, and civil society.

AGRA’s integrated programs in seeds, soil health, market access and policy promote rapid and sustainable agricultural growth based on smallholder farmers. Through developing Africa’s high potential agricultural areas, while boosting farmer productivity across more challenging environments, AGRA is working to transform smallholder agriculture into a highly productive, efficient, sustainable and competitive system, while protecting the environment.

**ACCESS AND MARKET SYSTEMS**

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<tr>
<td>AGRA</td>
<td>AGRA Soil Health Program</td>
<td>This program will help build a sustainable foundation for the agricultural sector growth by restoring African soil fertility through the use of improved soil fertility management practices and fertilizers that stably increase crop productivity.</td>
<td>$164.6 million</td>
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<tr>
<td>United Nations World Food Programme</td>
<td>Purchase for Progress</td>
<td>This project seeks to increase smallholder farmers’ incomes by launching a program that connects farmers to World Food Program purchasing.</td>
<td>$66.1 million</td>
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<tr>
<td>TechnoServe, Inc.</td>
<td>Doubling Coffee Incomes in East Africa</td>
<td>This project works to develop East Africa’s comparative advantage in specialty coffee through interventions designed to improve quality, increase production, and link smallholders to specialty coffee buyers.</td>
<td>$46.9 million</td>
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<tr>
<td>Heifer Project International Inc</td>
<td>East Africa Dairy Development</td>
<td>This project aims to increase the incomes of small dairy farmers by targeting interventions along the dairy value chain to link farmers in Kenya, Rwanda, and Uganda to growing milk markets. Specifically, it works with farmer-owned chilling plants and informal collection points to improve their businesses and create “hubs” of services, including animal health and artificial insemination services.</td>
<td>$42.8 million</td>
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<tr>
<td>AGRA</td>
<td>AGRA Market Access Program Reinvestment</td>
<td>This reinvestment in the Market Access Program continues efforts to increase the income of smallholder farmers marketing staple food crops.</td>
<td>$28 million</td>
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*Farmers walk through a low-till rice crop in Jandla village (Karnal, India, 2009).*
Q: How does the Agricultural Development strategy fit with the foundation’s other priorities?

A: The foundation’s ultimate goal is to reduce the world’s greatest inequities so every person has the opportunity to live a healthy, productive life. Initially, this led us to focus our global efforts on health. Fighting and preventing health problems that get too little attention but have a major impact on the developing world is still the core focus of the foundation’s work.

A little more than five years ago, we began to ask ourselves: How can we help many of the same families who are benefiting from our health efforts but are still struggling with hunger and poverty? The answer was to assist them in the work they do: The vast majority of the world’s poorest people are small farmers, and helping them grow and sell more is the smartest way to reduce hunger and poverty over the long term.

As of June 2011, we have committed more than $1.8 billion to agricultural development efforts, focusing on the needs of small farmers in Sub-Saharan Africa and South Asia.

Q: How does biotechnology fit into your agriculture strategy?

A: Today, severe hunger and poverty affect nearly 1 billion people around the world. Many are small farmers in the developing world, whose success or failure determines whether they are able to feed and care for their families.

Having enough nutritious food to feed a growing population is a complex challenge; there’s no silver bullet. That’s why we take a long-term, comprehensive approach that includes developing quality seeds and healthy soil, supporting access to tools and opportunities that are relevant to local farmers’ needs, increasing access to markets, and encouraging effective policies.

In helping small farmers improve their productivity and nutrition through improved seeds, the foundation works to provide them with similar options that are available to wealthier farmers in parts of Africa and other areas of the world. The foundation does not advocate any particular scientific method. We strongly believe in farmers having a voice and a choice in these decisions. Therefore, we support a range of crop breeding techniques so farmers have options and can choose what’s right for them. These techniques...

A young boy samples an orange-fleshed sweet potato in a busy market. Access to new farming techniques combined with the wider availability of the nutrient-rich sweet potatoes have driven down the malnutrition rate of children under age 5 in this region (Mwasonge, Tanzania).
include conventional breeding; an advanced breeding technique called marker-assisted breeding; and, in some of our grants, transgenic approaches that are sometimes referred to as genetic modification. While the latter approach is a small part of our portfolio, it is one that we believe has promise.

We realize there are concerns about funding research into genetically modified crops, and we understand these concerns. We are resolute in our long-term commitment to working with grantees, governments, and farmers to ensure these new varieties effectively deliver the benefits intended and are safe for farmers, consumers, and the environment. Here are six reasons we fund research in this area.

- Transgenic approaches offer unique and promising solutions to farmers facing difficult growing conditions.
- These approaches could help improve the health of millions.
- New varieties will be affordable to small farmers in the developing world.
- Scientific research shows no confirmed cases of harm to human health or the environment.
- These crops offer direct benefits to people and the environment.
- Local involvement and farmer choice are project cornerstones.

To learn more, read Why the Foundation Funds Research in Crop Biotechnology

Q: Why are you investing in livestock?
A: It is estimated that nearly three-quarters of the world’s rural poor rely on livestock to help meet their basic food and income needs. This area has been severely underfunded, receiving just 3 percent of total global agricultural development funding but contributing 30 percent to 40 percent of the agricultural gross domestic product across a significant portion of Sub-Saharan Africa and South Asia.

The foundation is focusing on three species: chickens, goats, and cows. Chickens are considered at the bottom of the “livestock ladder” and raising them is one of the few ways that poor African women can generate income. Poultry has many advantages: It is inexpensive to feed, house, breed, and process, making it an economically viable protein source. It also produces eggs each day that can be eaten or sold.

With increasing income, small farmers typically move up the livestock ladder to raising goats. Goats are low maintenance and can produce meat, milk, and fiber. They can also be traded to pay for health care and education. At the top of the ladder is the dairy cow. Dairy cows can be used to pull a plow and provide organic fertilizer. They produce milk that farmers can give to their families or sell, and they provide meat. Cows are considered valuable family assets—both as a status symbol and a bank account.

Our livestock work focuses on enhancing the health and productivity of livestock, while considering the environment, as well as animal welfare.

Q: What are you doing about climate change?
A: The foundation believes climate change is a major issue facing all of us, particularly poor communities in developing countries. We applaud the work many are doing to help find solutions in this area. We believe the best way for the foundation to address climate change is to help poor farmers adapt. For example, we have made several grants to help small farmers who live in extreme poverty adapt to increased drought and flooding through the development of crops such as drought-tolerant maize for Africa and stress-tolerant rice that can survive up to two weeks underwater. We are also investing in improved irrigation efficiency.

TO LEARN MORE
About the Global Development Program:
www.gatesfoundation.org/global-development

About Agricultural Development:
www.gatesfoundation.org/AGRIculturaldevelopment